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16. Abstract This report contains the description and test results of overhead stowage bin calibrations and longitudinal impact testing of a 10-foot transport airframe section conducted at the Transportation Research Center Inc. (TRC). The purpose of the tests was to measure the structural responses and interaction between the fuselage, overhead stowage bins, and auxiliary fuel tank under simulated, potentially survivable, crash conditions. A 10-foot section from a Boeing 737, Model 200 was used as the test section. The overhead stowage bin connection supports were instrumented with strain gages and calibrated. Two types of overhead storage bins were installed in the transport airframe and pulled in a longitudinal direction at various known loads to monitor and record the strain gage outputs. The transport airframe was longitudinally impact tested using TRC's 24-inch shock tester. Peak accelerations and corresponding velocity changes of 6.1 g (23.2 ft/sec), 8.2 g (32.2 ft/sec), and 14.2 g (41.7 ft/sec) were recorded. The transport airframe section was configured with a 120-inch overhead stowage bin (Bin A) attached to the left/pilot side, a 60-inch overhead stowage bin (Bin B) attached to the right/copilot side, and a 500-gallon auxiliary fuel tank attached underneath the airframe's passenger floor section. The test articles were equipped with accelerometers, strain gages, and potentiometers totaling approximately 90 channels of data per simulated crash test.			
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PREFACE

This report was jointly prepared by the Federal Aviation Administration William J. Hughes Technical Center and the Transportation Research Center Inc. (TRC) under FAA contract DTFA03-95-R-00028. The report contains a description of the overhead bin pull calibrations and longitudinal impact tests which were performed using an FAA furnished transport airframe section and TRC's in-house equipment. The project was administered by Mr. Robert McGuire, FAA Project Engineer with contractor facility support provided by Mr. Tim Macy, TRC Engineering Technician. Technical assistance was provided by Messrs. Stephen Soltis, Gary Frings, Tong Vu, and Anthony Dang from the FAA William J. Hughes Technical Center and Messrs. Jeffery Sankey and John Stultz of TRC.

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EXECUTIVE SUMMARY

A 10-foot transport airframe section was longitudinally impact tested at the Transportation Research Center Inc. (TRC). The purpose of the test was to measure the structural responses of and the interaction between the overhead stowage bins, auxiliary fuel tank, and the fuselage under simulated, potentially survivable, impact conditions. Three tests were conducted using TRC's 24-inch Hyge Shock Tester. The first test attained a peak acceleration of 6.1 g and a velocity change of 23.2 ft/sec. The second test reached 8.2 g and 32.2 ft/sec. The third test reached 14.2 g and 41.7 ft/sec. The input acceleration pulses were triangular in shape. The airframe test section was configured with a 120-inch (Bin A) overhead stowage bin on the left/pilot side, a 60-inch overhead stowage bin (Bin B) on the right/copilot side, and a 500-gallon auxiliary fuel tank located in the cargo area.

Acceleration measurements were obtained from the instrumented fuselage, overhead stowage bins, auxiliary fuel tank, and the Hyge sled. Load measurements were obtained from the overhead stowage bin attachment supports. Displacement measurements were obtained from potentiometers attached to the overhead stowage bins and auxiliary fuel tank. Peak longitudinal floor acceleration levels were 25.7 g in the front and 27.2 g in the rear for the first test, 8.5 g in the front and 8.2 g in the rear for the second test, and 16.7 g in the front and 16.4 g in the rear for the third test. Both overhead stowage bins remained attached to the fuselage for Tests 1 and 2. Bin A detached from the fuselage during Test 3. Bin B remained attached to the fuselage during Test 3. The ballast installed in the overhead stowage bins was contained in all tests. The auxiliary fuel tank detached from its floor attachment fixture during Test 1 but was restrained by the test fixture. The impact of the auxiliary fuel tank on the forward closure of the test fixture in the first test produced some data spikes in the recorded cabin floor accelerations. The auxiliary fuel tank was removed for Tests 2 and 3.

DATA ACQUISITION EXPLANATIONS

Test 1

The auxiliary fuel tank separated from the fuselage structure at 76 to 85 milliseconds into the test and data channel outputs after this event are questionable. Floor accelerometers recorded data spikes from the auxiliary fuel tank separation and its subsequent contact with the front fuselage-to-sled attachment framework.

Test 3

Bin A separated from the fuselage structure 67 milliseconds into the test and data channel outputs after this event are questionable.

INTRODUCTION

A 10-foot section of a transport airframe was longitudinally impact tested at the Transportation Research Center Inc. (TRC). The purpose of the test was to measure the structural responses of and the interaction between the overhead stowage bins, auxiliary fuel tank, and the fuselage under simulated, potentially survivable, impact conditions. Three tests were conducted using TRC's 24-inch Hyge Shock Tester. This longitudinal acceleration test is one in a series of section and full-scale tests conducted in support of the Federal Aviation Administration's (FAA) Crash Dynamics and Engineering Development Program [1]. Such tests included a full-scale transport controlled impact demonstration [2], a vertical drop test of a transport airframe section [3], and a vertical drop test of a narrow-body fuselage section with overhead stowage bins and an auxiliary fuel tank on board [4].

The objective of this test was to determine the structural response and interaction between a transport airplane fuselage section and the overhead stowage bins, in a crash environment considered to be potentially survivable. Response data obtained from these tests will be used to determine the dynamic response characteristics of the airframe installation.

A 10-foot-long airframe section was longitudinally impact tested at peak acceleration levels of 6.1 g (23.2 ft/sec), 8.2 g (32.2 ft/sec), and 14.2 g (41.7 ft/sec). The airframe section contained two sets of overhead stowage bins weighing 92 pounds and 53 pounds, respectively, and one 500-gallon auxiliary fuel tank filled with 3,550 pounds of water. Structural response data were obtained during the test from instrumentation installed on the fuselage structure, overhead stowage bins, and the auxiliary fuel tank.

DESCRIPTION

TEST ARTICLE.

The airframe test article was a 10-foot section cut from the mid fuselage of a B737-200 transport airplane (figure 1). The section structure was separated forward of frame section (FS) 400 and aft of (FS) 500A. The airframe section was configured with two overhead stowage bin assemblies. One 120-inch overhead stowage bin assembly (referred to as Bin A) was attached to the left/pilot side of the airframe between FS400 and FS500A, and one 60-inch stowage bin (referred to as Bin B) was attached to the right/copilot side between FS420 and FS500. In addition, a 500-gallon auxiliary fuel tank and mounting framework were secured to the underside of the passenger compartment floor beams between FS420 and FS480. The test article's description and weight are shown in table 1.

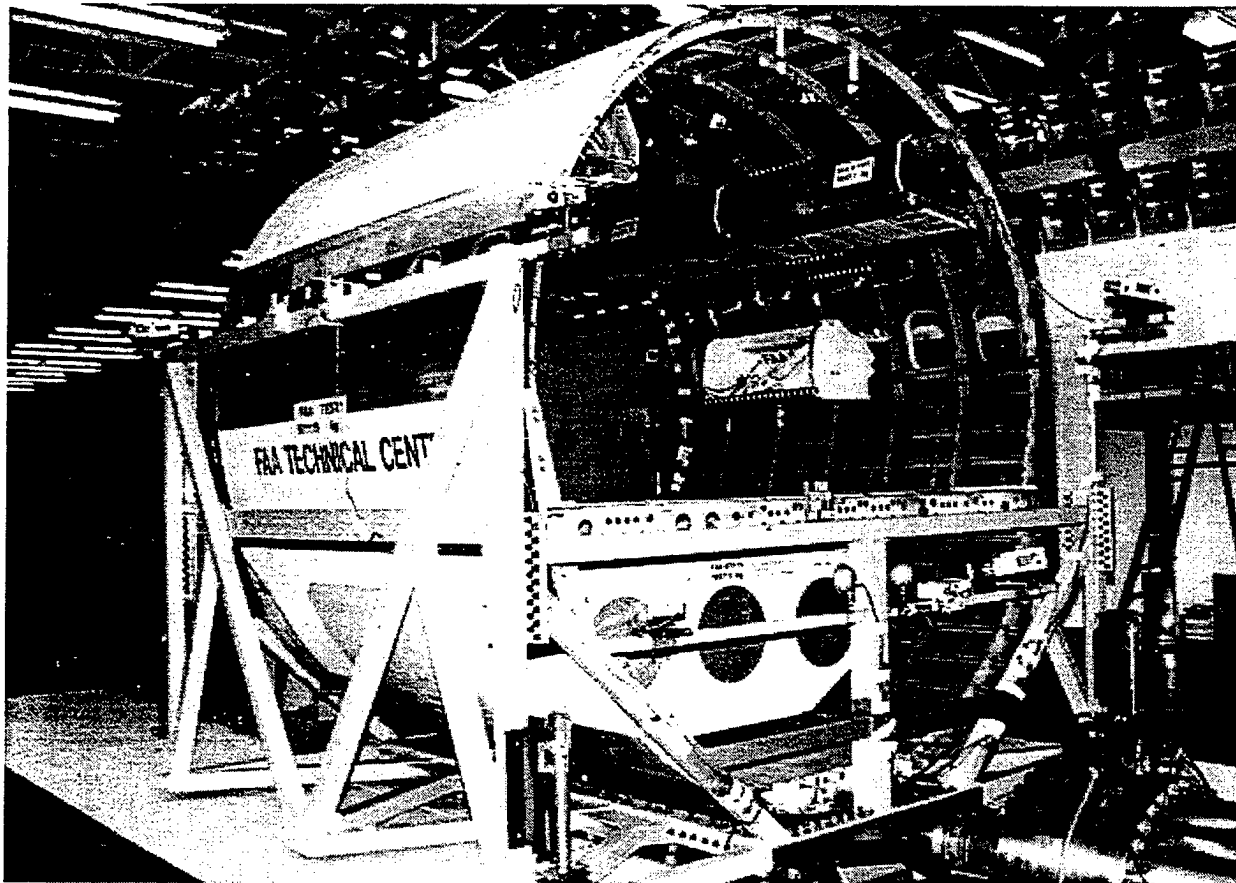
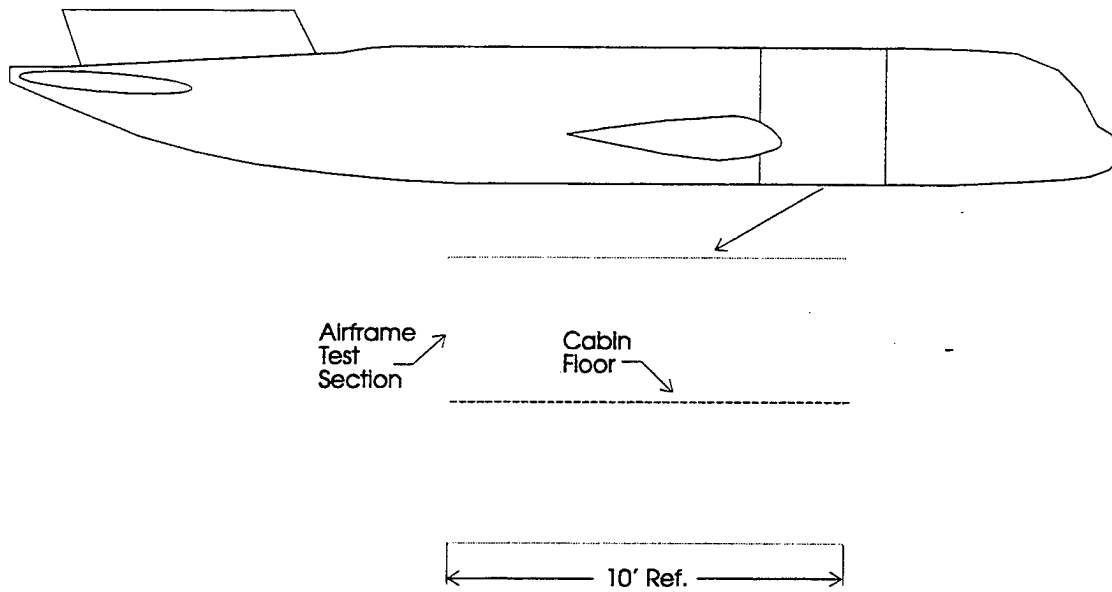


FIGURE 1. AIRFRAME TEST SECTION AND FLOOR PLAN

TABLE 1. AIRFRAME TEST SECTION INSTALLATION WEIGHT

Item	Description	Total Weight (lb.)
Airframe Section Framework	FS400 to FS500A	7180
500-Gallon Auxiliary Fuel Tank	Patrick Aircraft Tank System Inc.	343
Auxiliary Fuel Tank Ballast	Water	3550
Overhead Stowage Bin A Passenger Service Unit	C and D Interiors 120-inch bin	92
Overhead Stowage Bin A Ballast	¾-inch plywood sections	210
Overhead Stowage Bin B Passenger Service Unit	Hexcel 60-inch bin	53
Overhead Stowage Bin B Ballast	¾-inch plywood sections	120
Empty Weight of Airframe	B737-200	2036
Total Weight		13,584

TEST METHOD.

An existing test fixture was modified to attach the airframe section to the sled. The critical design constraints were to keep the weight to a minimum and to minimize the effect of the fixture on the structural integrity of the airframe by not altering the floor-fuselage shell interface load path. Refer to "Longitudinal Impact Test of a Transport Airframe Section" [5] for a detailed description of the test fixture. The test fixture was used to complete the overhead bin calibrations.

Three longitudinal impact tests were conducted. The first test was conducted with a peak acceleration level of 6.1 g, the second with a peak acceleration level of 8.2 g, and the third with a peak acceleration of 14.2 g. Twelve high-speed cameras (500 feet per second) and two real-time video tape cameras were used to document the first longitudinal impact. Ten high-speed cameras (500 feet per second) and two real-time video tape cameras were used to document the second longitudinal impact. Ten high-speed cameras (500 feet per second) and one real-time video tape camera were used to document the third longitudinal impact. Four of the high-speed cameras and all video tape cameras viewed the test events from various positions along the test track.

INSTRUMENTATION.

A series of overhead stowage bin pull tests were conducted prior to the impact tests to calibrate the bin attachment support strain gages and to determine each strain gage output. The Bin A calibration was conducted from 0 to 1800 lb. in 200-lb. increments, and from 1800 to 0 lb. in 400-lb. increments. Readings from the Bin B calibrations were taken from 0 to 1000 lb. and from 1000 to 0 lb. in 200-lb. increments. A comparison was made between recorded values and expected values of each channel. The bins were pulled by a steel cable applied through the center of gravity. Tension was applied to the cable by using a threaded rod and nut attached to the end of the cable. See figures C-6 through C-10. The stowage bin calibrations were documented on video tape.

The airframe section, the overhead storage bins, and the auxiliary fuel tank were instrumented with accelerometers and potentiometers. The attachment supports for the overhead stowage bins were instrumented with strain gages. Table 2 identifies the instrumentation used in Tests 1, 2, and 3. The instrumentation locations are documented in figures 2 through 5 and in appendix A. The plots of recorded acceleration, displacement, load responses, and integrated channels are presented in appendix B, with calibration data contained in appendix C. Appendix C also presents methods, calibration data, and illustrations from static pull tests that were conducted on the overhead stowage bins prior to the longitudinal impact tests. These static tests involved longitudinally loading the overhead stowage bins and measuring the overall pull force, with load cell OBAPXF, and the corresponding load on each instrumented support. These data were compared with the data generated in static calibration tests of the individual supports conducted by the FAA William J. Hughes Technical Center prior to this test program.

TABLE 2. INSTRUMENTATION

Tests 1	Accelerometer			Strain Gage	Displacement Potentiometer	Channels
	Longitudinal	Lateral	Vertical			
Fuselage	6	4	6	-	-	16
Floor	2	2	2	-	-	6
Overhead Stowage Bin A*	3	3	3	-	1	10
Overhead Stowage Bin A* Attachment Supports	-	-	-	21	-	21
Overhead Stowage Bin B**	3	3	3	-	1	10
Overhead Stowage Bin B** Attachment Supports	-	-	-	16	-	16
Auxiliary Fuel Tank	3	2	2	-	1	8
Drive Fixture/Sled	1	-	-	-	-	1
Total						87

Tests 2 and 3	Accelerometer			Strain Gage	Displacement Potentiometer	Channels
	Longitudinal	Lateral	Vertical			
Fuselage	6	4	6	-	-	16
Floor	2	2	2	-	-	6
Overhead Stowage Bin A*	3	3	3	-	1	10
Overhead Stowage Bin A* Attachment Supports	-	-	-	21	-	21
Overhead Stowage Bin B**	3	3	3	-	1	10
Overhead Stowage Bin B** Attachment Supports	-	-	-	16	-	16
Drive Fixture/Sled	1	-	-	-	-	1
Total						79

*Bin A 120-inch long overhead stowage bin on the left/pilot side

**Bin B 60-inch long overhead stowage bin on the right/copilot side

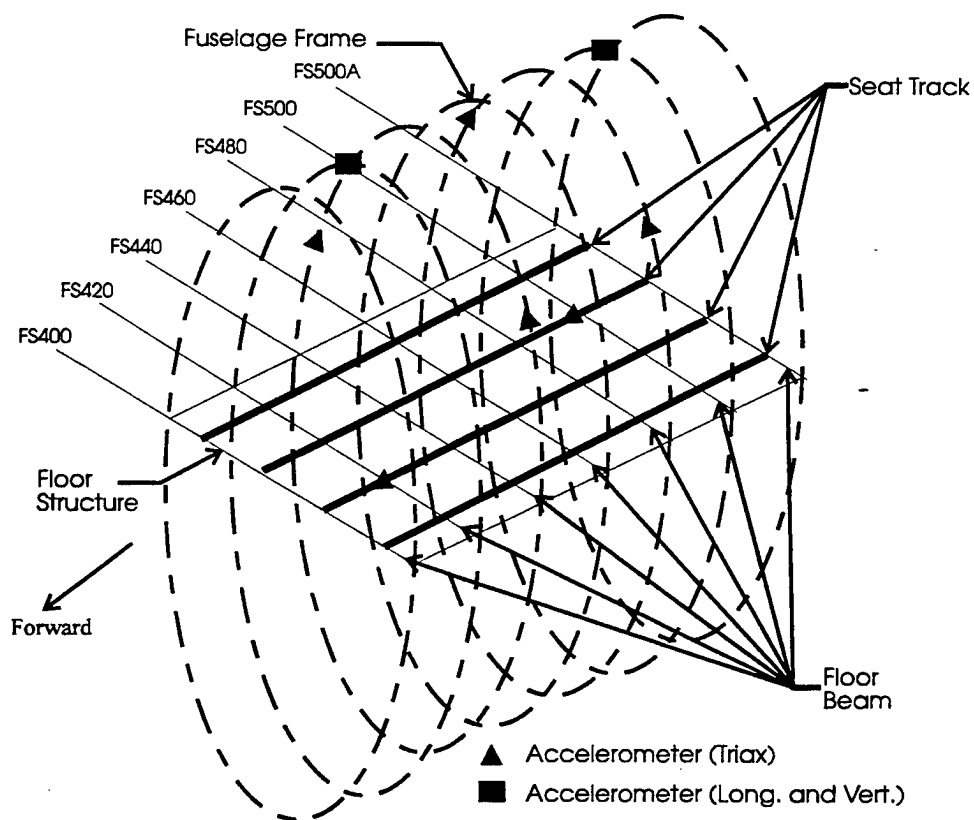


FIGURE 2. FUSELAGE INSTRUMENTATION LOCATIONS

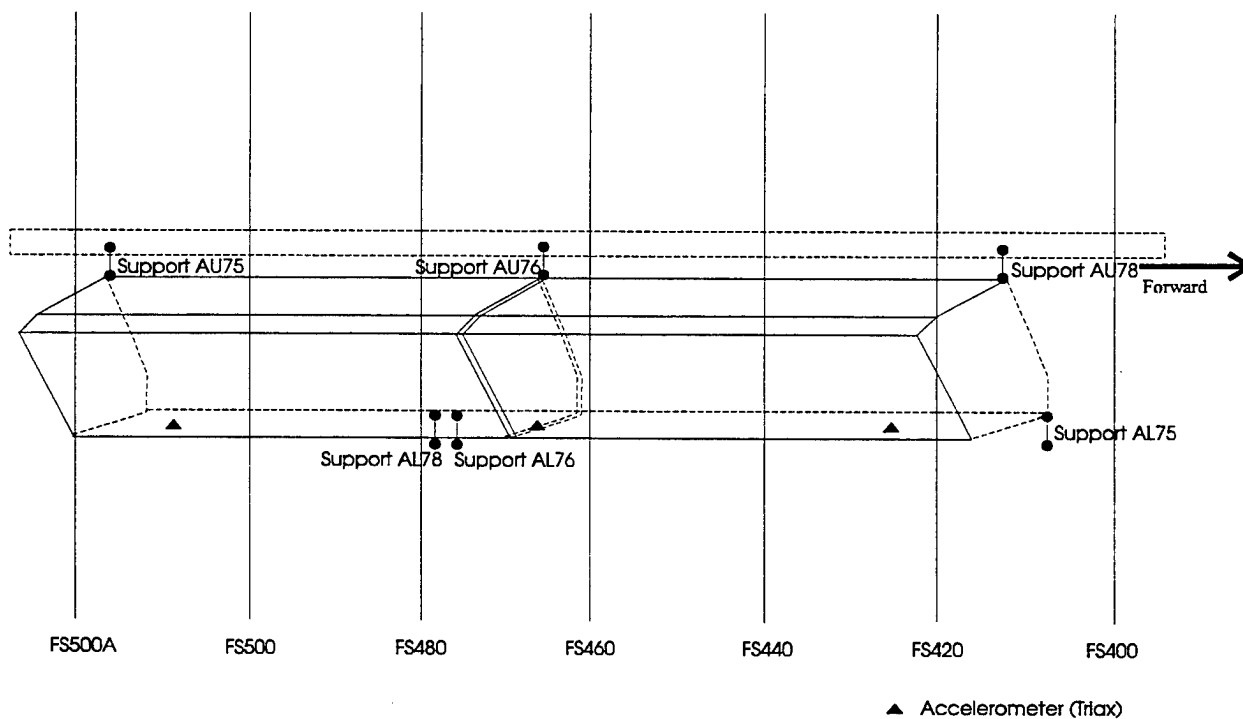


FIGURE 3. BIN A INSTRUMENTATION LOCATIONS

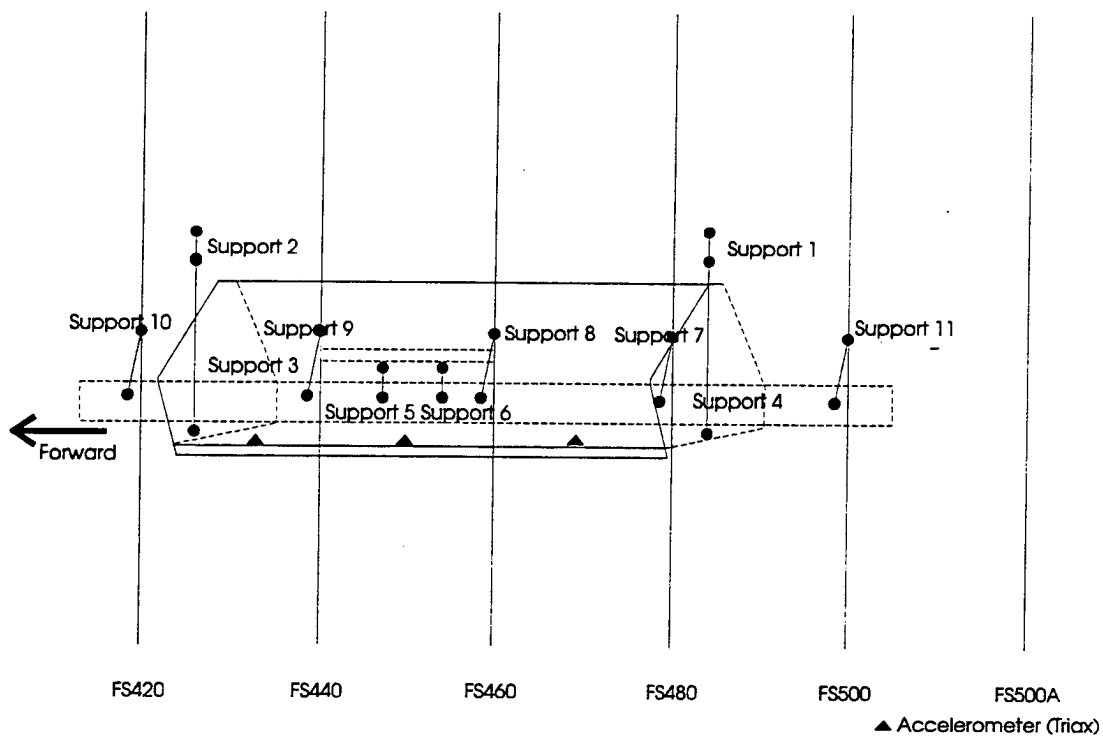


FIGURE 4. BIN B INSTRUMENTATION LOCATIONS

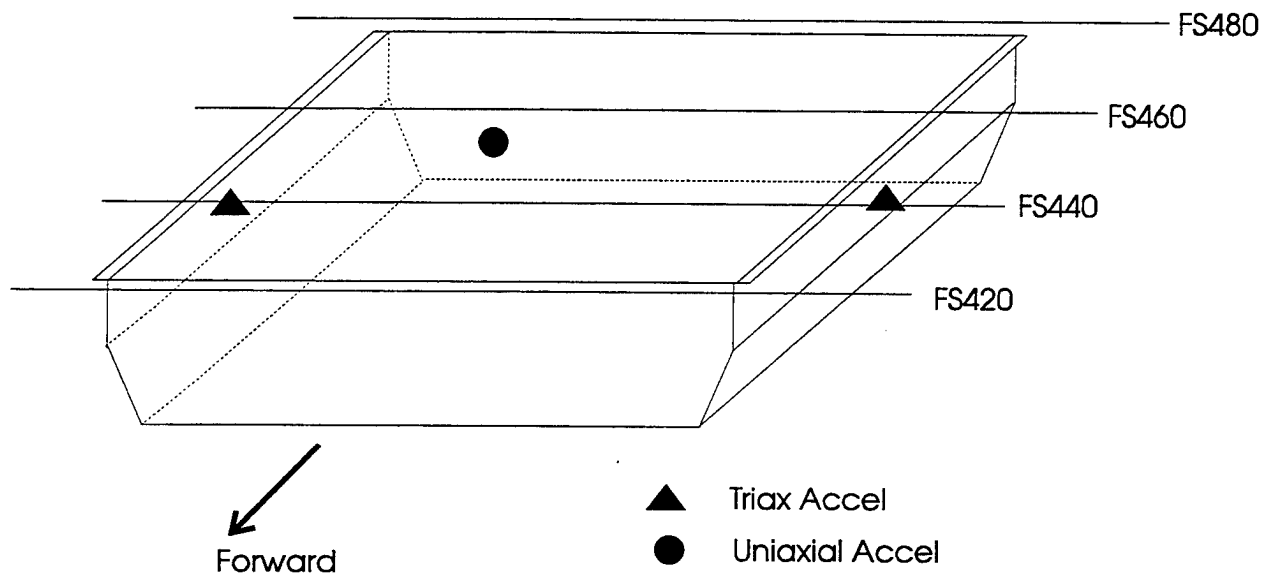


FIGURE 5. AUXILIARY FUEL TANK INSTRUMENTATION LOCATIONS

TEST SUMMARY AND DISCUSSION

TEST DATA.

The airframe test section was longitudinally tested at low-, intermediate-, and high-energy impact conditions.

Test 1 subjected the airframe and its contents to a 6.1-g peak acceleration. Figures 6 through 80, at the end of this report, illustrate the pre- and posttest conditions. No visual evidence of deformation of the fuselage structure or the overhead stowage bins was observed following the test. The auxiliary fuel tank broke loose from its attachment framework at approximately 75 to 85 milliseconds into the test event and was eventually restrained by the test fixture approximately 50 milliseconds later. Posttest observations of the auxiliary fuel tank and its attachment framework indicated the front edges of the fuel tank's aluminum side rails sheared off against the framework's front stops. In addition, the fuel tank's lower attachment straps broke loose from the airframe's cargo floor. Figures 55 through 80 document posttest observations of the auxiliary fuel tank system. The auxiliary fuel tank was removed and was not included in subsequent impact tests.

Test 2 subjected the airframe and its contents to an 8.2-g peak acceleration. Pretest conditions are illustrated in figures 81 and 82. Posttest photographs were not taken as no visible evidence of deformation or damage to the fuselage or its contents was observed.

Test 3 subjected the airframe and its contents to a 14.2-g peak acceleration. Pre- and posttest conditions are illustrated in figures 83 through 131. The test fixture and fuselage section suffered no significant visible damage or deformation. Bin A detached from the fuselage frame sections during the test event. The fuselage frame sections were damaged due to the detachment of overhead stowage Bin A. Damage is described in the posttest observation section of this report.

DATA EXPLANATIONS.

At the beginning of the longitudinal impact test program, overhead stowage bins were loaded with cargo ballast and the data channels were zeroed. Prior to each test, the data channels were checked for obvious problems. Posttest data processing included digitally processing each channel by prefiltering each channel at 1650 Hertz, removing any data offsets (zeroing each data channel) prior to the test event, integrating selected channels to provide displacements and velocities, and filtering each channel per SAE J211/MAR 95. Data plots were reviewed following each test for indications of anomalies.

TEST 1. Sixteen airframe accelerations, eighteen overhead stowage bins accelerations (nine each on Bin A and Bin B), twenty-one support loads on Bin A, sixteen support loads on Bin B, seven auxiliary fuel tank accelerations, three displacement measurements (one each on Bin A, Bin B, and the auxiliary fuel tank), and one sled acceleration were recorded. Instrumentation locations are shown in figures 2 through 5.

TEST 2. Sixteen airframe accelerations, eighteen overhead stowage bins accelerations (nine each on Bin A and Bin B), twenty-one support loads on Bin A, sixteen support loads on Bin B, two displacement measurements (one each on Bin A and Bin B), and one sled acceleration were recorded. Instrumentation locations are shown in figures 2 through 4.

TEST 3. Sixteen airframe accelerations, eighteen overhead stowage bins accelerations (nine each on Bin A and Bin B), twenty-one support loads on Bin A, sixteen support loads on Bin B, two displacement measurements (one each on Bin A and Bin B), and one sled acceleration were recorded. Instrumentation locations are shown in figures 2 through 4.

POSTTEST OBSERVATIONS.

TEST 1. There was no noticeable evidence of damage or deformation to either Bin A or Bin B. The auxiliary fuel tank had released from its upper and lower attachment framework and supports. The front part (approximately 90%) of the auxiliary fuel tank was suspended below the upper attachment framework. The rear part (approximately 10%) of the auxiliary fuel tank was still above the framework's lower longitudinal runners. Figures 60, 62, 63, 65, 66, 69, 70, and 72 illustrate the interaction between the upper auxiliary fuel tank framework attachments and the fuel tank side suspension runners. The front-lower edge of the auxiliary fuel tank was resting on top of the cargo bay floor. Both lower auxiliary fuel tank braces detached from the cargo bay floor. Figures 55, 56, and 74 through 80 illustrate the fuel tank lower braces and cargo bay floor damage.

TEST 2. There was no noticeable evidence of damage or deformation to either Bin A or Bin B. The auxiliary fuel tank was not installed for this test.

TEST 3. Bin A detached from the airframe. It was restrained by a tether rope attached prior to the test. Figures 85 through 89 illustrate the restraint on Bin A. The top attachment rail for Bin A detached from the airframe's section numbers FS400, FS440, FS460, FS500, and FS500A. The detachment damaged the frame section. Figures 94 through 99, 106, 107, 110, 111, 114, 115, 118 through 120, and 123 through 125 illustrate damage to the frame sections. The top attachment rail remained attached to the upper bin supports. No damage was evident on instrumented upper bin supports (serial numbers 78, 76, and 75) of Bin A.

The front-lower bin support (serial number 75) and the bracket that attaches the support to the air duct detached from the bin and air duct. The bin support and its air duct attachment bracket remained fastened together. The bin support's turnbuckle attachments were deformed but still attached to the fuselage brace. Figures 91 through 94 illustrate damage observed to the bin, instrumented front-lower bin support with attachment bracket, turnbuckles, and air duct.

The mid lower bin support (serial number 76) remained attached to the overhead stowage bin. The bin support attachment bracket detached from the air duct. The bin support and its air duct attachment bracket remained fastened together. The bin support lower turnbuckle broke while the upper turnbuckle was only bent. The turnbuckles-to-fuselage attachment brace detached from the fuselage but remained attached to the turnbuckle ends.

The aft-lower bin support (serial number 78) remained attached to the overhead stowage bin. The bin support's attachment bracket detached from FS480 and from the support itself. Figures 95 through 105 illustrate the damage observed to lower bin supports serial numbers 76 and 78 and their related attachments.

Bin B Link numbers 2 and 7 through 11 were slightly deformed due to the forward movement of the bin. The overhead stowage bin remained attached to the supports and airframe. Figures 127 through 131 illustrate the posttest condition of Bin B and its attachment supports.

The data summary for Tests 1, 2, and 3 is shown in tables 3, 4, and 5.

TABLE 3. DATA SUMMARY – TEST 1 6 g

No. Location	Positive Direction	Negative Direction
1. Sled Acceleration Velocity	1.1 g @ 224.2 ms -0.1 ft/sec @ 224.2 ms	6.1 g @ 94.4 ms 23.2 ft/sec @ 215.0 ms
2. Fuselage, Floor FS420 Acceleration Longitudinal Lateral Vertical	25.7 g @ 234.6 ms 6.1 g @ 228.8 ms 142. g @ 160.8 ms	25.1 g @ 241.0 ms 4.9 g @ 148.7 ms 14.4 g @ 105.5 ms
3. Fuselage, Floor FS500 Acceleration Longitudinal Lateral Vertical	27.2 g @ 232.4 ms 4.3 g @ 270.3 ms 21.4 g @ 251.0 ms	25.2 g @ 240.6 ms 3.8 g @ 234.7 ms 18.5 g @ 226.1 ms
4. Fuselage, Top FS420 Acceleration Longitudinal Vertical	3.5 g @ 221.4 ms 5.6 g @ 269.0 ms	7.3 g @ 135.4 ms 5.9 g @ 297.3 ms
5. Fuselage, Top FS500 Acceleration Longitudinal Vertical	3.2 g @ 221.9 ms 9.8 g @ 252.0 ms	7.1 g @ 135.5 ms 10.0 g @ 261.0 ms
6. Fuselage, Left FS440 Acceleration Longitudinal Lateral Vertical	2.6 g @ 220.3 ms 9.0 g @ 237.1 ms 3.4 g @ 151.8 ms	6.7 g @ 107.2 ms 10.0 g @ 259.8 ms 3.6 g @ 145.3 ms
7. Fuselage, Left FS480 Acceleration Longitudinal Lateral Vertical	2.8 g @ 236.2 ms 10.5 g @ 267.8 ms 4.0 g @ 253.0 ms	6.9 g @ 135.4 ms 9.3 g @ 244.9 ms 4.4 g @ 245.8 ms

TABLE 3. DATA SUMMARY – TEST 1 6 g (Continued)

No. Location	Positive Direction	Negative Direction
8. Fuselage, Right FS440 Acceleration		
Longitudinal	3.0 g @ 234.1 ms	7.0 g @ 135.0 ms
Lateral	5.4 g @ 232.9 ms	4.7 g @ 225.6 ms
Vertical	1.7 g @ 228.4 ms	2.7 g @ 179.0 ms
9. Fuselage, Right FS480 Acceleration		
Longitudinal	3.6 g @ 220.2 ms	7.3 g @ 135.0 ms
Lateral	7.3 g @ 246.6 ms	6.3 g @ 237.4 ms
Vertical	2.3 g @ 236.8 ms	2.7 g @ 247.9 ms
10. Bin A, Front Acceleration		
Longitudinal	3.3 g @ 229.4 ms	7.1 g @ 97.2 ms
Lateral	2.8 g @ 235.5 ms	3.1 g @ 213.6 ms
Vertical	4.3 g @ 277.2 ms	5.2 g @ 242.4 ms
11. Bin A, Center Acceleration		
Longitudinal	3.2 g @ 229.2 ms	7.0 g @ 97.4 ms
Lateral	1.6 g @ 241.4 ms	2.0 g @ 279.8 ms
Vertical	2.6 g @ 278.8 ms	3.1 g @ 284.6 ms
12. Bin A, Aft Acceleration		
Longitudinal	2.9 g @ 229.2 ms	7.1 g @ 97.4 ms
Lateral	2.5 g @ 195.0 ms	2.9 g @ 282.6 ms
Vertical	4.8 g @ 245.4 ms	4.7 g @ 174.0 ms
13. Bin A, Lower Front Support Force		
Longitudinal	94.1 lb @ 274.2 ms	285.8 lb @ 94.7 ms
Lateral	136.5 lb @ 102.7 ms	105.3 lb @ 242.2 ms
Vertical	54.5 lb @ 236.3 ms	45.9 lb @ 154.7 ms
14. Bin A, Lower Mid Support Force		
Longitudinal	149.4 lb @ 279.7 ms	448.6 lb @ 85.6 ms
Lateral	63.5 lb @ 299.0 ms	69.5 lb @ 199.1 ms
Vertical	61.0 lb @ 247.7 ms	41.4 lb @ 225.3 ms
15. Bin A, Lower Aft Support Force		
Longitudinal	30.6 lb @ 282.0 ms	142.0 lb @ 95.8 ms
Lateral	84.1 lb @ 267.4 ms	164.4 lb @ 99.6 ms
Vertical	22.7 lb @ 213.4 ms	79.3 lb @ 84.5 ms

TABLE 3. DATA SUMMARY – TEST 1 6 g (Continued)

No. Location	Positive Direction	Negative Direction
16. Bin A, Upper Front Support Force/Strain		
Inner Longitudinal	111.5 lb @ 98.8 ms	102.6 lb @ 285.4 ms
Outer Longitudinal	215.8 lb @ 72.6 ms	106.0 lb @ 303.4 ms
Outer Vertical	2.0 mv @ 283.0 ms	1.8 mv @ 165.0 ms
Inner Vertical	0.7 mv @ 307.4 ms	0.6 mv @ 284.2 ms
17. Bin A, Upper Mid Support Force/Strain		
Inner Longitudinal	698.9 lb @ 98.9 ms	133.1 lb @ 262.1 ms
Outer Longitudinal	702.1 lb @ 99.2 ms	233.8 lb @ 251.7 ms
Outer Vertical	0.9 mv @ 251.1 ms	0.5 mv @ 306.9 ms
Inner Vertical	0.4 mv @ 81.7 ms	0.2 mv @ 284.2 ms
18. Bin A, Upper Aft Support Force/Strain		
Inner Longitudinal	181.3 lb @ 90.2 ms	33.8 lb @ 250.7 ms
Outer Longitudinal	471.4 lb @ 75.6 ms	96.6 lb @ 244.9 ms
Outer Vertical	3.3 mv @ 250.0 ms	1.7 mv @ 275.5 ms
Inner Vertical	0.5 mv @ 258.7 ms	0.7 mv @ 251.4 ms
19. Bin B, Front Acceleration		
Longitudinal	3.4 g @ 254.2 ms	7.7 g @ 106.5 ms
Lateral	3.4 g @ 235.9 ms	5.3 g @ 227.0 ms
Vertical	4.2 g @ 281.8 ms	3.3 g @ 288.3 ms
20. Bin B, Center Acceleration		
Longitudinal	3.6 g @ 301.9 ms	7.6 g @ 106.6 ms
Lateral	3.2 g @ 251.4 ms	2.8 g @ 227.4 ms
Vertical	9.4 g @ 269.0 ms	9.0 g @ 245.2 ms
21. Bin B, Aft Acceleration		
Longitudinal	3.5 g @ 223.3 ms	7.9 g @ 106.4 ms
Lateral	5.4 g @ 250.0 ms	4.1 g @ 208.1 ms
Vertical	5.0 g @ 247.5 ms	5.7 g @ 271.0 ms
22. Bin B, Aft Support 1 Force		
Vertical	73.0 lb @ 173.4 ms	61.8 lb @ 244.4 ms
23. Bin B, Forward Support 2 Force		
Vertical	94.3 lb @ 272.2 ms	88.5 lb @ 95.0 ms
24. Bin B, Forward Support 3 Force		
Vertical	80.1 lb @ 272.2 ms	257.9 lb @ 112.1 ms

TABLE 3. DATA SUMMARY – TEST 1 6 g (Continued)

No. Location	Positive Direction	Negative Direction
25. Bin B, Aft Support 4 Force Vertical	46.8 lb @ 174.0 ms	42.3 lb @ 244.5 ms
26. Bin B, Aft Plate Support 5 Force Longitudinal	166.6 lb @ 256.6 ms	638.0 lb @ 108.6 ms
27. Bin B, Forward Plate Support 6 Force Longitudinal	180.0 lb @ 255.3 ms	561.3 lb @ 111.2 ms
28. Bin B, L Support 7, Gage 1 Force Lateral	56.2 lb @ 109.0 ms	26.2 lb @ 263.5 ms
29. Bin B, L Support 7, Gage 2 Force Lateral	48.8 lb @ 308.4 ms	98.9 lb @ 114.2 ms
30. Bin B, L Support 8, Gage 1 Force Lateral	31.6 lb @ 303.8 ms	36.2 lb @ 86.3 ms
31. Bin B, L Support 8, Gage 2 Force Lateral	41.9 lb @ 260.2 ms	123.4 lb @ 107.0 ms
32. Bin B, L Support 9, Gage 1 Force Lateral	155.0 lb @ 107.4 ms	61.1 lb @ 308.7 ms
33. Bin B, L Support 9, Gage 2 Force Lateral	16.3 lb @ 305.7 ms	30.8 lb @ 182.6 ms
34. Bin B, L Support 10, Gage 1 Force Lateral	384.2 lb @ 106.8 ms	153.0 lb @ 308.6 ms
35. Bin B, L Support 10, Gage 2 Force Lateral	165.3 lb @ 104.8 ms	44.0 lb @ 301.8 ms
36. Bin B, L Support 11, Gage 1 Force Lateral	35.6 lb @ 224.1 ms	53.6 lb @ 172.8 ms
37. Bin B, L Support 11, Gage 2 Force Lateral	52.1 lb @ 261.7 ms	85.4 lb @ 114.7 ms

TABLE 3. DATA SUMMARY – TEST 1 6 g (Continued)

No. Location	Positive Direction	Negative Direction
38. Fuel Tank, Left Acceleration		
Longitudinal	7.4 g @ 207.7 ms	10.1 g @ 232.6 ms
Lateral	6.7 g @ 135.0 ms	6.3 g @ 138.5 ms
Vertical	10.0 g @ 130.2 ms	2.8 g @ 144.4 ms
39. Fuel Tank, Right Acceleration		
Longitudinal	10.6 g @ 220.7 ms	9.4 g @ 280.6 ms
Lateral	5.2 g @ 138.7 ms	5.6 g @ 240.3 ms
Vertical	3.6 g @ 230.6 ms	2.9 g @ 220.2 ms
40. Fuel Tank, Top Acceleration		
Longitudinal	12.3 g @ 130.6 ms	11.3 @ 233.0 ms
41. Bin A Displacement Measured		
Longitudinal	0.3 in @ 108.3 ms	0.1 in @ 309.1 ms
42. Bin B Displacement Measured		
Longitudinal	@ 115.9 ms 0.1 in	0.1 in @ 263.4 ms
43. Auxiliary Fuel Tank Displacement Measured		
Longitudinal	22.0 in @ 310.0 ms	0.0 in @ 0.0 ms

TABLE 4. DATA SUMMARY – TEST 2 9 g

No. Location	Positive Direction	Negative Direction
1. Sled Acceleration	2.3 g @ 271.4 ms	8.2 g @ 98.6 ms
Velocity	-0.1 ft/sec @ 271.4 ms	32.2 ft/sec @ 269.1 ms
2. Fuselage, Floor FS420 Acceleration		
Longitudinal	2.6 g @ 292.1 ms	8.5 g @ 99.0 ms
Lateral	1.1 g @ 278.2 ms	0.7 g @ 283.3 ms
Vertical	2.5 g @ 292.9 ms	2.0 g @ 297.8 ms
3. Fuselage, Floor FS500 Acceleration		
Longitudinal	2.6 g @ 279.7 ms	8.2 g @ 99.5 ms
Lateral	1.4 g @ 283.8 ms	1.0 g @ 299.4 ms
Vertical	1.9 g @ 309.3 ms	1.1 g @ 72.2 ms

TABLE 4. DATA SUMMARY – TEST 2 9 g (Continued)

No. Location	Positive Direction	Negative Direction
4. Fuselage, Top FS420 Acceleration Longitudinal Vertical	1.8 g @ 302.3 ms 3.4 g @ 299.3 ms	8.8 g @ 93.7 ms 3.6 g @ 309.9 ms
5. Fuselage, Top FS500 Acceleration Longitudinal Vertical	1.7 g @ 302.1 ms 2.8 g @ 292.8 ms	9.0 g @ 92.9 ms 4.1 g @ 288.4 ms
6. Fuselage, Left FS440 Acceleration Longitudinal Lateral Vertical	1.2 g @ 301.6 ms 1.9 g @ 300.3 ms 2.3 g @ 304.5 ms	8.9 g @ 100.3 ms 2.0 g @ 309.8 ms 2.5 g @ 309.8 ms
7. Fuselage, Left FS480 Acceleration Longitudinal Lateral Vertical	1.4 g @ 291.6 ms 1.7 g @ 298.6 ms 1.3 g @ 303.8 ms	8.7 g @ 100.6 ms 1.3 g @ 274.2 ms 1.9 g @ 308.3 ms
8. Fuselage, Right FS440 Acceleration Longitudinal Lateral Vertical	1.6 g @ 301.6 ms 2.0 g @ 294.2 ms 1.3 g @ 290.2 ms	8.5 g @ 106.8 ms 1.8 g @ 285.9 ms 1.7 g @ 294.6 ms
9. Fuselage, Right FS480 Acceleration Longitudinal Lateral Vertical	1.7 g @ 290.2 ms 1.9 g @ 275.7 ms 2.2 g @ 281.8 ms	8.3 g @ 106.0 ms 2.5 g @ 291.7 ms 1.7 g @ 275.8 ms
10. Bin A, Front Acceleration Longitudinal Lateral Vertical	1.3 g @ 247.0 ms 1.1 g @ 285.8 ms 1.7 g @ 165.1 ms	10.4 g @ 78.2 ms 2.4 g @ 94.1 ms 2.8 g @ 303.8 ms
11. Bin A, Center Acceleration Longitudinal Lateral Vertical	1.3 g @ 247.0 ms 0.9 g @ 111.7 ms 0.7 g @ 96.1 ms	10.3 g @ 78.8 ms 0.6 g @ 267.1 ms 1.1 g @ 79.0 ms
12. Bin A, Aft Acceleration Longitudinal Lateral Vertical	1.3 g @ 245.7 ms 2.8 g @ 95.0 ms 1.4 g @ 304.8 ms	10.4 g @ 78.8 ms 1.5 g @ 73.8 ms 1.7 g @ 90.7 ms

TABLE 4. DATA SUMMARY – TEST 2 9 g (Continued)

No. Location	Positive Direction	Negative Direction
13. Bin A, Lower Front Support Force		
Longitudinal	22.1 lb @ 250.7 ms	492.7 lb @ 94.1 ms
Lateral	197.8 lb @ 98.0 ms	23.4 lb @ 279.4 ms
Vertical	23.4 lb @ 236.0 ms	38.9 lb @ 135.8 ms
14. Bin A, Lower Mid Support Force		
Longitudinal	84.9 lb @ 306.2 ms	641.0 lb @ 83.3 ms
Lateral	33.3 lb @ 269.6 ms	64.4 lb @ 106.2 ms
Vertical	33.9 lb @ 151.4 ms	7.8 lb @ 42.2 ms
15. Bin A, Lower Aft Support Force		
Longitudinal	31.0 lb @ 252.3 ms	196.5 lb @ 86.2 ms
Lateral	2.1 lb @ 17.8 ms	296.8 lb @ 99.8 ms
Vertical	17.9 lb @ 235.4 ms	133.9 lb @ 83.0 ms
16. Bin A, Upper Front Support Force/Strain		
Inner Longitudinal	286.5 lb @ 92.4 ms	13.4 lb @ 310.0 ms
Outer Longitudinal	304.1 lb @ 79.8 ms	83.3 lb @ 306.3 ms
Outer Vertical	0.4 mv @ 246.2 ms	2.2 mv @ 136.0 ms
Inner Vertical	0.4 mv @ 46.5 ms	0.7 mv @ 302.1 ms
17. Bin A, Upper Mid Support Force/Strain		
Inner Longitudinal	909.4 lb @ 89.7 ms	59.2 lb @ 274.2 ms
Outer Longitudinal	934.7 lb @ 92.6 ms	69.2 lb @ 273.4 ms
Outer Vertical	1.5 mv @ 79.8 ms	0.9 mv @ 285.5 ms
Inner Vertical	0.5 mv @ 80.6 ms	0.6 mv @ 296.1 ms
18. Bin A, Upper Aft Support Force/Strain		
Inner Longitudinal	276.8 lb @ 86.7 ms	12.4 lb @ 257.4 ms
Outer Longitudinal	661.4 lb @ 78.3 ms	52.5 lb @ 307.4 ms
Outer Vertical	2.2 mv @ 74.7 ms	0.9 mv @ 302.1 ms
Inner Vertical	0.4 mv @ 120.2 ms	0.5 mv @ 273.6 ms
19. Bin B, Front Acceleration		
Longitudinal	2.0 g @ 281.0 ms	9.0 g @ 106.8 ms
Lateral	1.5 g @ 121.0 ms	1.0 g @ 57.8 ms
Vertical	1.9 g @ 283.1 ms	1.9 g @ 306.2 ms

TABLE 4. DATA SUMMARY – TEST 2 9 g (Continued)

No. Location	Positive Direction	Negative Direction
20. Bin B, Center Acceleration		
Longitudinal	1.9 g @ 281.0 ms	8.9 g @ 105.8 ms
Lateral	0.7 g @ 278.4 ms	0.9 g @ 104.5 ms
Vertical	2.3 g @ 289.6 ms	2.2 g @ 64.9 ms
21. Bin B, Aft Acceleration		
Longitudinal	1.8 g @ 281.0 ms	9.1 g @ 106.2 ms
Lateral	2.2 g @ 277.0 ms	3.0 g @ 293.7 ms
Vertical	3.0 g @ 305.0 ms	2.5 g @ 300.1 ms
22. Bin B, Aft Support 1 Force		
Vertical	65.6 lb @ 172.5 ms	33.3 lb @ 202.3 ms
23. Bin B, Forward Support 2 Force		
Vertical	40.7 lb @ 264.5 ms	89.4 lb @ 98.1 ms
24. Bin B, Forward Support 3 Force		
Vertical	15.7 lb @ 65.4 ms	264.3 lb @ 136.1 ms
25. Bin B, Aft Support 4 Force		
Vertical	43.4 lb @ 172.6 ms	19.1 lb @ 202.6 ms
26. Bin B, Aft Support 5 Force		
Longitudinal	82.9 lb @ 267.9 ms	833.3 lb @ 108.5 ms
27. Bin B, Forward Support 6 Force		
Longitudinal	76.9 lb @ 268.4 ms	729.0 lb @ 108.1 ms
28. Bin B, L Support 7, Gage 1 Force		
Lateral	89.5 lb @ 98.1 ms	7.2 lb @ 275.6 ms
29. Bin B, L Support 7, Gage 2 Force		
Lateral	11.5 lb @ 283.6 ms	154.4 lb @ 110.9 ms
30. Bin B, L Support 8, Gage 1 Force		
Lateral	29.8 lb @ 310.0 ms	53.3 lb @ 64.6 ms
31. Bin B, L Support 8, Gage 2 Force		
Lateral	40.6 lb @ 265.4 ms	146.5 lb @ 101.8 ms

TABLE 4. DATA SUMMARY – TEST 2 9 g (Continued)

No. Location	Positive Direction	Negative Direction
32. Bin B, L Support 9, Gage 1 Force Lateral	202.2 lb @ 106.9 ms	17.3 lb @ 270.0 ms
33. Bin B, L Support 9, Gage 2 Force Lateral	-0.2 lb @ 106.9 ms	41.4 lb @ 119.5 ms
34. Bin B, L Support 10, Gage 1 Force Lateral	460.5 lb @ 106.2 ms	93.2 lb @ 268.5 ms
35. Bin B, L Support 10, Gage 2 Force Lateral	219.7 lb @ 107.6 ms	5.1 lb @ 269.0 ms
36. Bin B, L Support 11, Gage 1 Force Lateral	42.3 lb @ 310.0 ms	57.9 lb @ 64.3 ms
37. Bin B, L Support 11, Gage 2 Force Lateral	32.9 lb @ 283.4 ms	111.3 lb @ 68.7 ms
38. Bin A Displacement Longitudinal	0.5 in @ 103.2 ms	0.0 in @ 18.4 ms
39. Bin B Displacement Longitudinal	0.2 in @ 119.4 ms	0.0 in @ 265.7 ms

TABLE 5. DATA SUMMARY – TEST 3 16 g

No. Location	Positive Direction	Negative Direction
1. Sled Acceleration Velocity Displacement	0.5 g @ 261.4 ms -0.1 ft/sec @ 261.4 ms 0.0 in @ 261.4 ms	14.2 g @ 80.1 ms 41.7 ft/sec @ 179.7 ms 111.6 in @ 310.0 ms
2. Fuselage, Floor FS420 Acceleration Longitudinal Lateral Vertical	1.0 g @ 227.7 ms 0.7 g @ 131.8 ms 2.6 g @ 161.4 ms	16.7 g @ 84.9 ms 0.7 g @ 77.9 ms 2.8 g @ 130.3 ms
3. Fuselage, Floor FS500 Acceleration Longitudinal Lateral Vertical	1.5 g @ 228.6 ms 1.4 g @ 45.7 ms 2.3 g @ 157.0 ms	16.4 g @ 85.4 ms 0.4 g @ 203.1 ms 2.8 g @ 134.8 ms

TABLE 5. DATA SUMMARY – TEST 3 16 g (Continued)

No. Location	Positive Direction	Negative Direction
4. Fuselage, Top FS420 Acceleration Longitudinal Vertical	2.0 g @ 207.0 ms 5.1 g @ 99.1 ms	17.4 g @ 77.6 ms 6.0 g @ 167.2 ms
5. Fuselage, Top FS500 Acceleration Longitudinal Vertical	1.9 g @ 206.7 ms 11.9 g @ 131.6 ms	18.1 g @ 78.6 ms 10.5 g @ 102.1 ms
6. Fuselage, Left FS440 Acceleration Longitudinal Lateral Vertical	10.4 g @ 155.1 ms 10.5 g @ 90.2 ms 4.5 g @ 89.7 ms	33.6 g @ 94.3 ms 7.4 g @ 120.4 ms 4.7 g @ 122.6 ms
7. Fuselage, Left FS480 Acceleration Longitudinal Lateral Vertical	29.3 g @ 115.4 ms 18.6 g @ 114.1 ms 40.9 g @ 114.2 ms	17.1 g @ 89.6 ms 22.0 g @ 110.7 ms 36.3 g @ 109.4 ms
8. Fuselage, Right FS440 Acceleration Longitudinal Lateral Vertical	1.9 g @ 207.2 ms 3.5 g @ 135.0 ms 2.5 g @ 129.8 ms	16.1 g @ 79.9 ms 3.3 g @ 129.9 ms 2.8 g @ 134.8 ms
9. Fuselage, Right FS480 Acceleration Longitudinal Lateral Vertical	1.6 g @ 251.3 ms 6.4 g @ 143.1 ms 2.5 g @ 157.0 ms	15.6 g @ 81.0 ms 5.6 g @ 157.2 ms 3.3 g @ 116.4 ms
10. Bin A, Front Acceleration Longitudinal Lateral Vertical	2.0 g @ 211.7 ms 5.7 g @ 106.5 ms 11.3 g @ 120.7 ms	14.6 g @ 67.0 ms 9.4 g @ 125.0 ms 14.0 g @ 97.9 ms
11. Bin A, Center Acceleration Longitudinal* Lateral Vertical	--- g @ --- ms 4.2 g @ 102.2 ms 4.3 g @ 121.4 ms	15.0 g @ 99.9 ms 7.2 g @ 114.8 ms 4.4 g @ 136.1 ms

TABLE 5. DATA SUMMARY – TEST 3 16 g (Continued)

No. Location	Positive Direction	Negative Direction
12. Bin A, Aft Acceleration		
Longitudinal	816.7 g @ 291.8 ms	27.0 g @ 283.2 ms
Lateral	5.5 g @ 85.3 ms	8.9 g @ 116.2 ms
Vertical	6.1 g @ 113.4 ms	7.0 g @ 124.6 ms
13. Bin A, Lower Front Support Force		
Longitudinal*	-3.9 lb @ 113.4 ms	--- lb @ --- ms
Lateral*	--- lb @ --- ms	601.8 lb @ 118.9 ms
Vertical*	130.0 lb @ 104.4 ms	--- lb @ --- ms
14. Bin A, Lower Mid Support Force		
Longitudinal*	76.0 lb @ 124.4 ms	--- lb @ --- ms
Lateral*	--- lb @ --- ms	--- lb @ --- ms
Vertical*	12.4 lb @ 63.4 ms	--- lb @ --- ms
15. Bin A, Lower Aft Support Force		
Longitudinal*	-0.9 lb @ 63.4 ms	--- lb @ --- ms
Lateral*	--- lb @ --- ms	--- lb @ --- ms
Vertical*	-0.7 lb @ 191.5 ms	--- lb @ --- ms
16. Bin A, Upper Front Support Force/Strain		
Inner Longitudinal	431.9 lb @ 82.9 ms	151.9 lb @ 115.3 ms
Outer Longitudinal	459.4 lb @ 65.0 ms	602.2 lb @ 105.2 ms
Outer Vertical	1.1 mv @ 86.7 ms	3.0 mv @ 96.4 ms
Inner Vertical	0.4 mv @ 100.5 ms	1.2 mv @ 84.5 ms
17. Bin A, Upper Mid Support Force/Strain		
Inner Longitudinal	1193.6 lb @ 65.8 ms	369.4 lb @ 136.6 ms
Outer Longitudinal	1235.3 lb @ 65.6 ms	401.2 lb @ 136.8 ms
Outer Vertical	8.8 mv @ 88.0 ms	2.1 mv @ 155.9 ms
Inner Vertical	0.8 mv @ 88.2 ms	0.8 mv @ 101.2 ms
18. Bin A, Upper Aft Support Force/Strain		
Inner Longitudinal	357.3 lb @ 66.6 ms	136.3 lb @ 177.8 ms
Outer Longitudinal	855.7 lb @ 66.3 ms	265.9 lb @ 189.8 ms
Outer Vertical	3.7 mv @ 63.4 ms	2.3 mv @ 94.1 ms
Inner Vertical	0.8 mv @ 84.2 ms	0.5 mv @ 119.5 ms

TABLE 5 DATA SUMMARY – TEST 3 16 g (Continued)

No. Location	Positive Direction	Negative Direction
19. Bin B, Front Acceleration		
Longitudinal	2.4 g @ 187.8 ms	16.6 g @ 87.8 ms
Lateral	4.5 g @ 103.4 ms	2.9 g @ 131.4 ms
Vertical	4.0 g @ 151.9 ms	4.4 g @ 143.9 ms
20. Bin B, Center Acceleration		
Longitudinal	2.4 g @ 187.5 ms	16.7 g @ 93.0 ms
Lateral	2.2 g @ 143.8 ms	5.6 g @ 154.9 ms
Vertical	3.9 g @ 124.0 ms	4.4 g @ 184.1 ms
21. Bin B, Aft Acceleration		
Longitudinal	2.6 g @ 187.4 ms	16.9 g @ 93.3 ms
Lateral	5.3 g @ 143.0 ms	8.7 g @ 155.9 ms
Vertical	7.8 g @ 146.5 ms	11.9 g @ 157.8 ms
22. Bin B, Aft Support 1 Force		
Vertical	227.4 lb @ 164.7 ms	161.0 lb @ 113.0 ms
23. Bin B, Forward Support 2 Force		
Vertical	126.7 lb @ 168.7 ms	305.9 lb @ 100.5 ms
24. Bin B, Forward Support 3 Force		
Vertical	80.1 lb @ 53.0 ms	1224.2 lb @ 103.7 ms
25. Bin B, Aft Support 4 Force		
Vertical	68.3 lb @ 164.8 ms	314.5 lb @ 113.4 ms
26. Bin B, Aft Plate Support 5 Force		
Longitudinal	111.8 lb @ 223.9 ms	1529.9 lb @ 95.0 ms
27. Bin B, Forward Plate Support 6 Force		
Longitudinal	90.7 lb @ 225.0 ms	1378.3 lb @ 96.5 ms
28. Bin B, L Support 7, Gage 1 Force		
Lateral	131.4 lb @ 62.5 ms	92.1 lb @ 153.4 ms
29. Bin B, L Support 7, Gage 2 Force		
Lateral	14.0 lb @ 211.6 ms	295.8 lb @ 95.9 ms
30. Bin B, L Support 8, Gage 1 Force		
Lateral	84.9 lb @ 178.1 ms	67.9 lb @ 55.0 ms

TABLE 5. DATA SUMMARY – TEST 3 16 g (Continued)

No. Location	Positive Direction	Negative Direction
31. Bin B, L Support 8, Gage 2 Force Lateral	114.1 lb @ 202.3 ms	199.3 lb @ 82.8 ms
32. Bin B, L Support 9, Gage 1 Force Lateral	356.3 lb @ 98.3 ms	60.8 lb @ 233.0 ms
33. Bin B, L Support 9, Gage 2 Force Lateral	-0.3 lb @ 5.2 ms	104.7 lb @ 107.5 ms
34. Bin B, L Support 10, Gage 1 Force Lateral	691.5 lb @ 93.8 ms	273.9 lb @ 183.5 ms
35. Bin B, L Support 10, Gage 2 Force Lateral	517.7 lb @ 99.7 ms	2.1 lb @ 0.0 ms
36. Bin B, L Support 11, Gage 1 Force Lateral	61.2 lb @ 228.8 ms	127.3 lb @ 58.1 ms
37. Bin B, L Support 11, Gage 2 Force Lateral	9.5 lb @ 211.6 ms	262.8 lb @ 95.7 ms
38. Bin A Displacement Measured Longitudinal	19.6 in @ 310.0 ms	0.0 in @ 9.0 ms
39. Bin B Displacement Measured Longitudinal	0.4 in @ 97.7 ms	0.0 in @ 1.9 ms

* See Data Acquisition Explanations; page xii

SUMMARY OF RESULTS

A Boeing 737 airframe section was instrumented and longitudinally tested at input levels of 6.1 g (23.2 ft/sec), 8.2 g (32.2 ft/sec), and 14.2 g (41.7 ft/sec). A summary of the test results follows.

1. The fuselage shell and floor structure had no visible separation or structural damage at the low-impact condition (Test 1).
2. Bin A and its attachment hardware had no visible damage at the low-impact condition (Test 1).
3. Bin B and its attachment hardware had no visible damage at the low-impact condition (Test 1).

4. The front of the auxiliary fuel tank's side attachment runners sheared off against the floor/fuel tank attachment framework stops, and the lower attachment points separated from the airframe structure at the low-impact condition (Test 1). The auxiliary fuel tank moved forward in the airframe until it contacted the sled attachment framework. The auxiliary fuel tank was removed from the airframe and was not included in subsequent impact tests.
5. The fuselage shell and floor structure had no visible separation or structural damage at the intermediate-impact condition (Test 2).
6. Bin A and its attachment hardware had no visible damage at the intermediate-impact condition (Test 2).
7. Bin B and its attachment hardware had no visible damage at the intermediate-impact condition (Test 2).
8. The floor structure had no visible separation or structural damage at the maximum-impact condition (Test 3).
9. The fuselage shell experienced damage to its left side frame sections due to the detachment of Bin A in the maximum-impact test condition (Test 3).
10. At the maximum test condition (Test 3), Bin A detached from the fuselage frame sections. The overhead stowage bin was restrained by a tether that was attached prior to the impact test. The upper longitudinal rail, which was fastened to the frame sections and served as an attachment point for the upper bin supports, detached from the fuselage frame section. The upper longitudinal rail remained attached to the upper bin supports. The upper bin supports remained attached to the overhead stowage bins. The forwardmost lower bin support detached from the overhead stowage bin and air duct but remained attached to the fuselage by its turnbuckles. The lower mid and aft bin supports detached from the fuselage and air ductwork. These supports remained attached to the overhead stowage bin.

REFERENCES

1. Airframe Longitudinal Testing, FAA Contract DTFA03-95-G00022, Dated September 26, 1995.
2. Johnson, D. and Garodz, L., Crashworthiness Experiment Summary—Full-Scale Transport Controlled Impact Demonstration Program, FAA Report DOT/FAA/CT-85/21, June 1986.
3. Johnson, D. and Wilson, T., Vertical Drop Test of a Transport Airframe Section, FAA Report DOT/FAA/CT-TN86/34, October 1986.

4. Logue, T. and McGuire, R., Vertical Drop Test of a Narrow-Body Fuselage Section with Overhead Stowage Bins and Auxiliary Fuel Tank on Board, FAA Report DOT/FAA/CT-94/116, April 1995.
5. Wade, B. and Johnson, D., Longitudinal Impact Test of a Transport Airframe Section, August 1988.

TEST 1. (FIGURES 6 THROUGH 80)



FIGURE 6. PRETEST OVERALL AIRFRAME LEFT SIDE VIEW

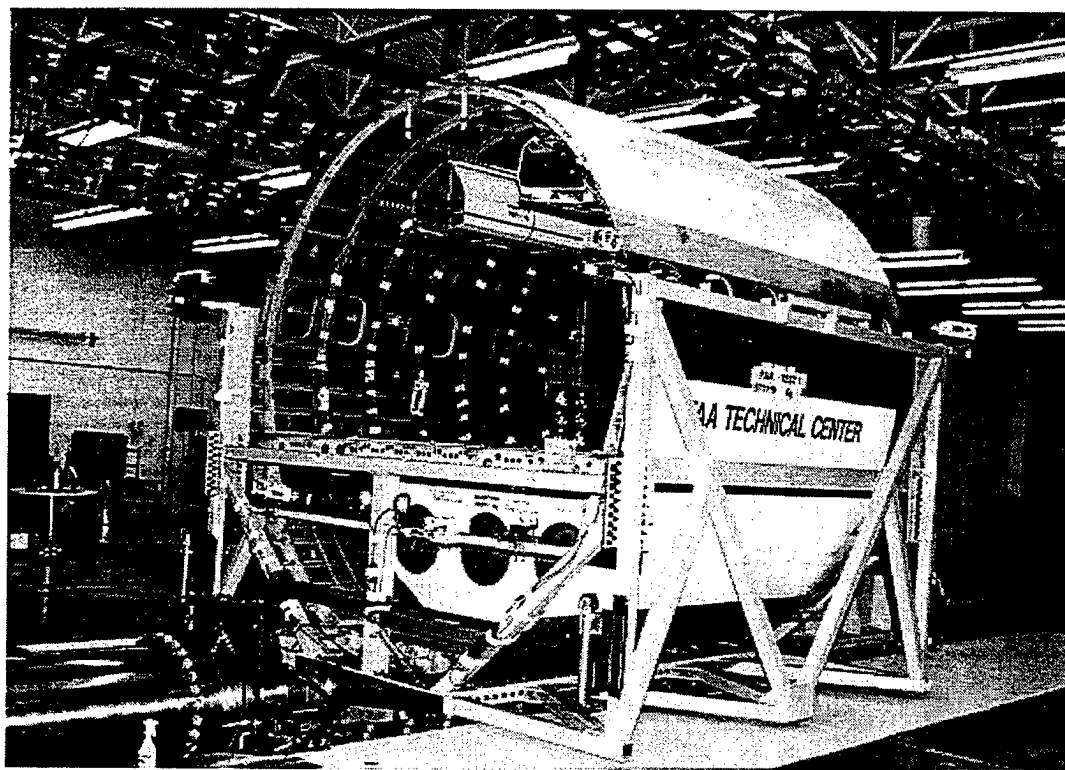


FIGURE 7. PRETEST OVERALL AIRFRAME LEFT FRONT ANGLE VIEW

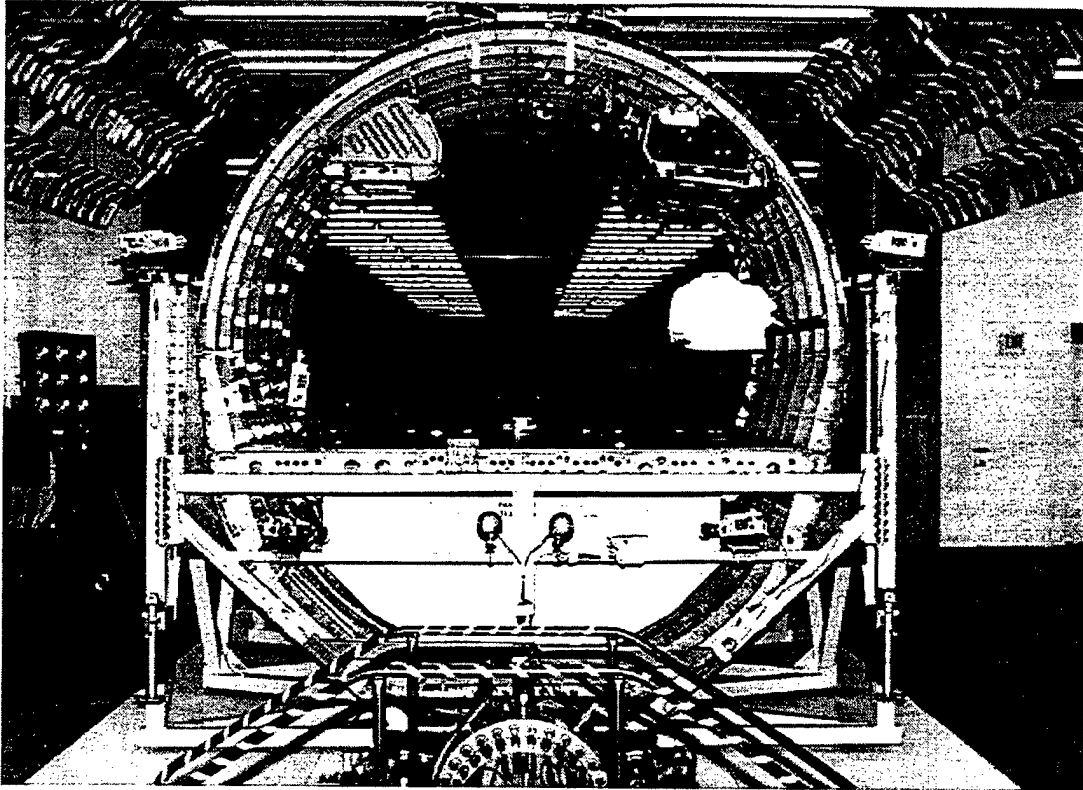


FIGURE 8. PRETEST OVERALL AIRFRAME FRONT VIEW

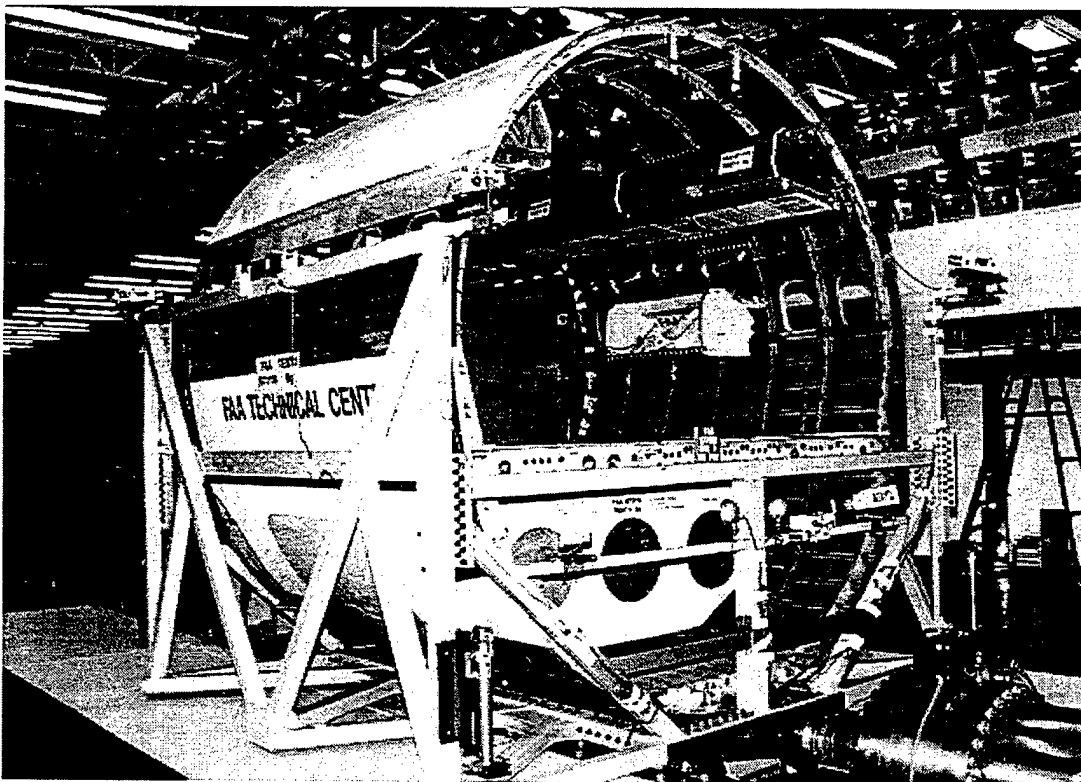


FIGURE 9. PRETEST OVERALL AIRFRAME RIGHT FRONT ANGLE VIEW

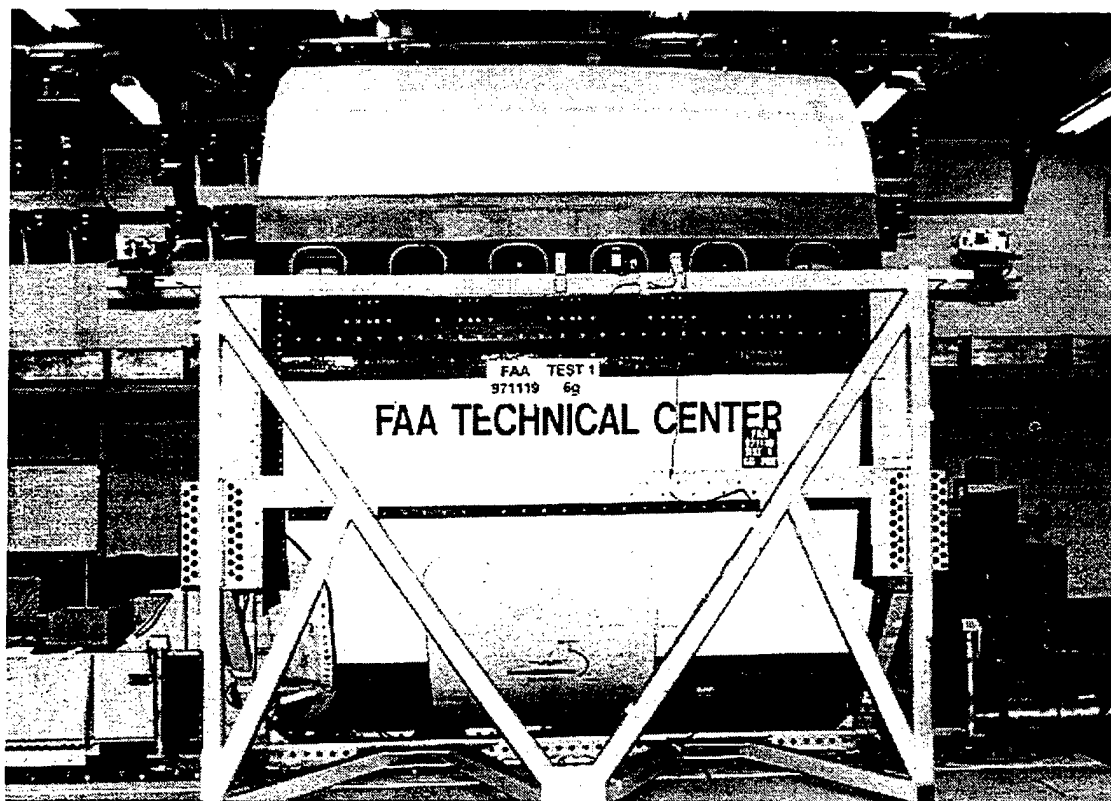


FIGURE 10. PRETEST OVERALL AIRFRAME RIGHT SIDE VIEW

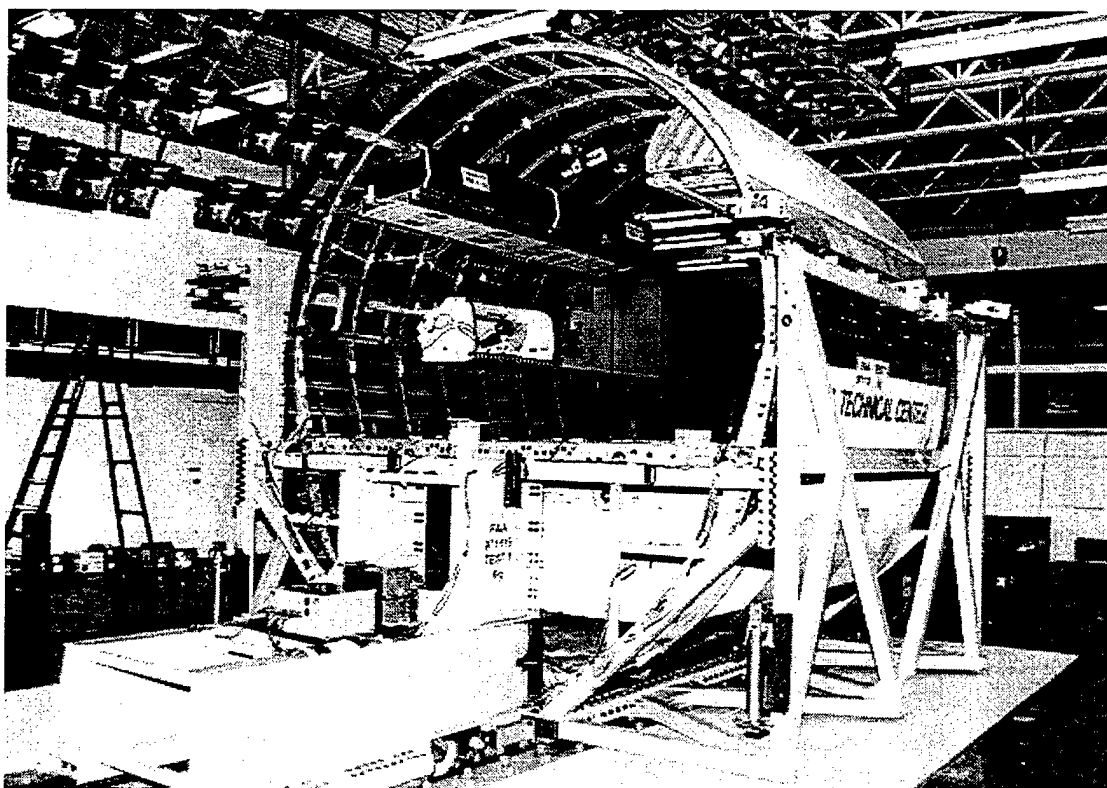


FIGURE 11. PRETEST OVERALL AIRFRAME RIGHT REAR ANGLE VIEW

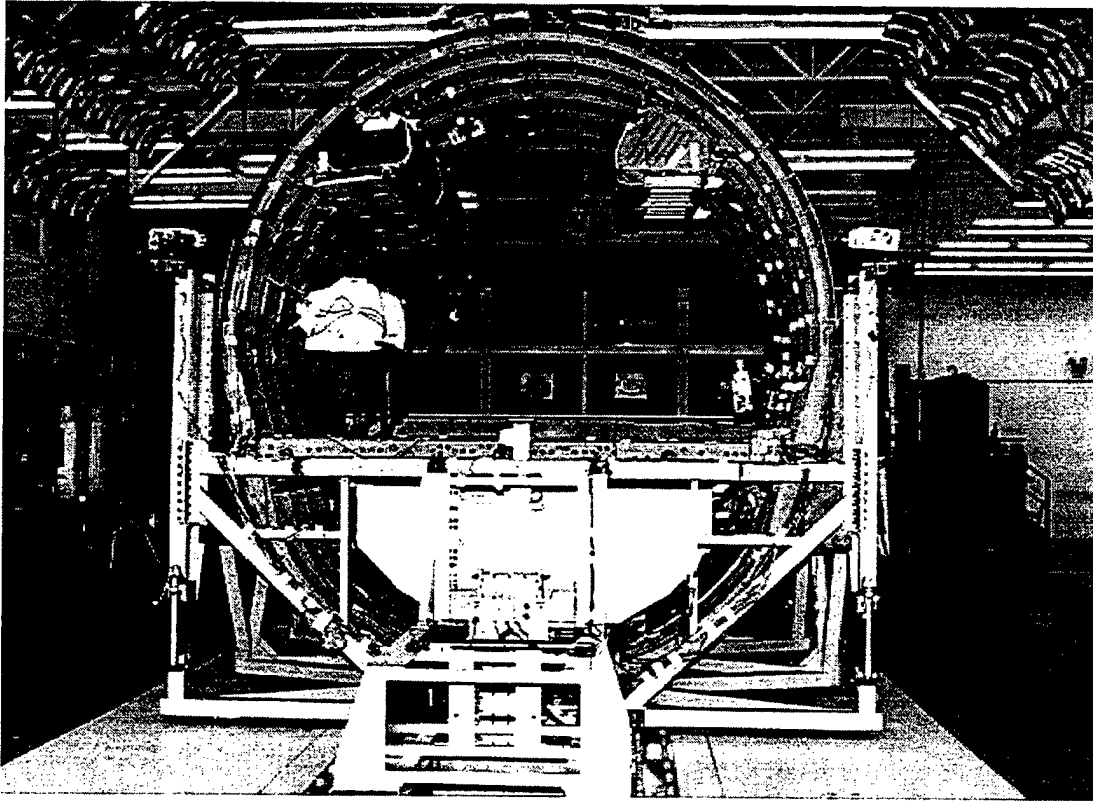


FIGURE 12. PRETEST OVERALL AIRFRAME REAR VIEW

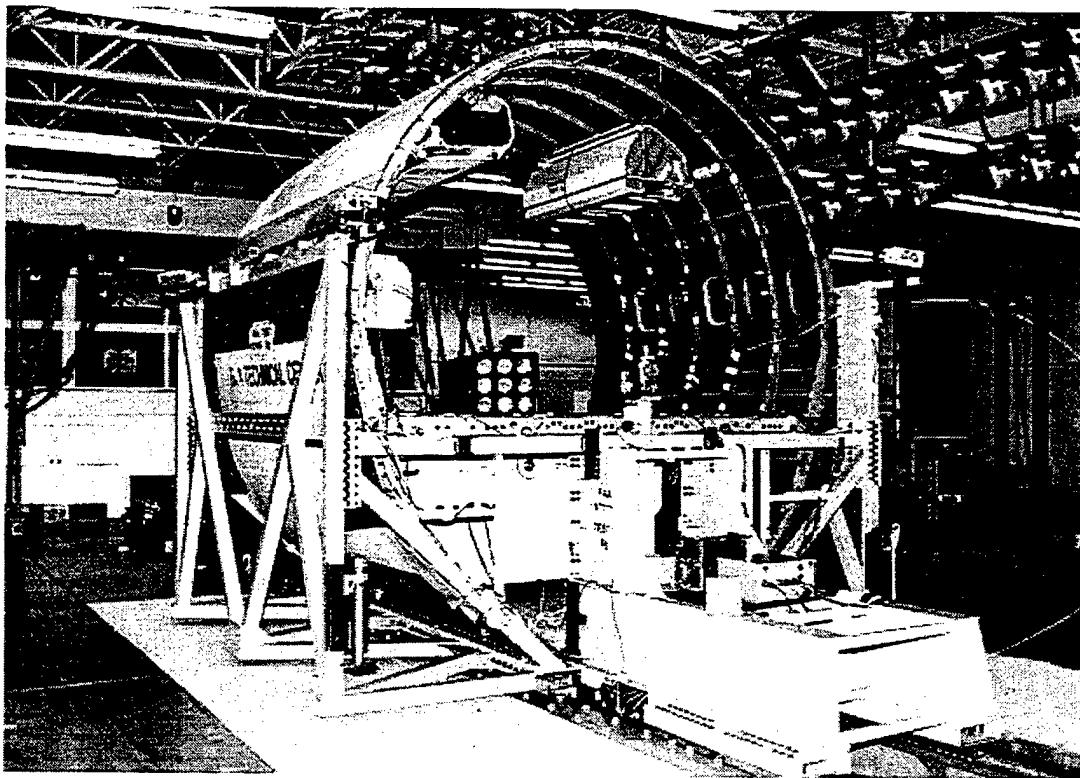


FIGURE 13. PRETEST OVERALL AIRFRAME LEFT REAR ANGLE VIEW

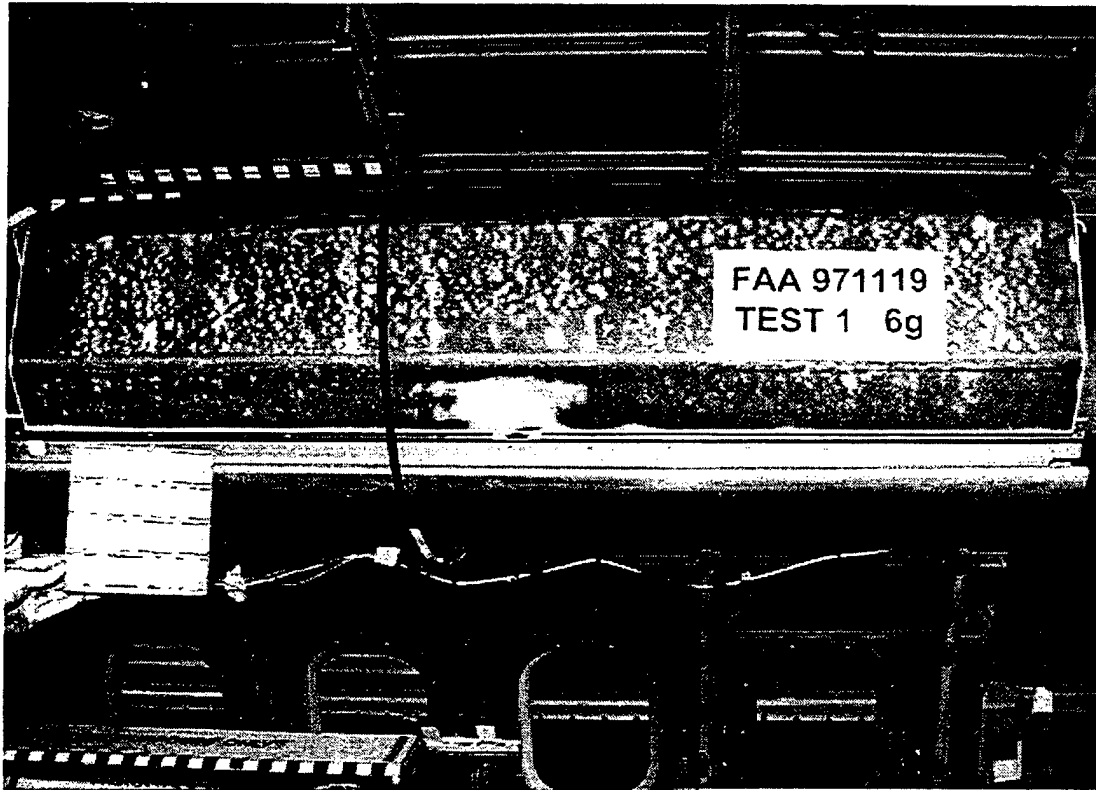


FIGURE 14. PRETEST BIN A FORE SECTION RIGHT OVERALL SIDE VIEW



FIGURE 15. PRETEST BIN A AFT SECTION RIGHT OVERALL SIDE VIEW

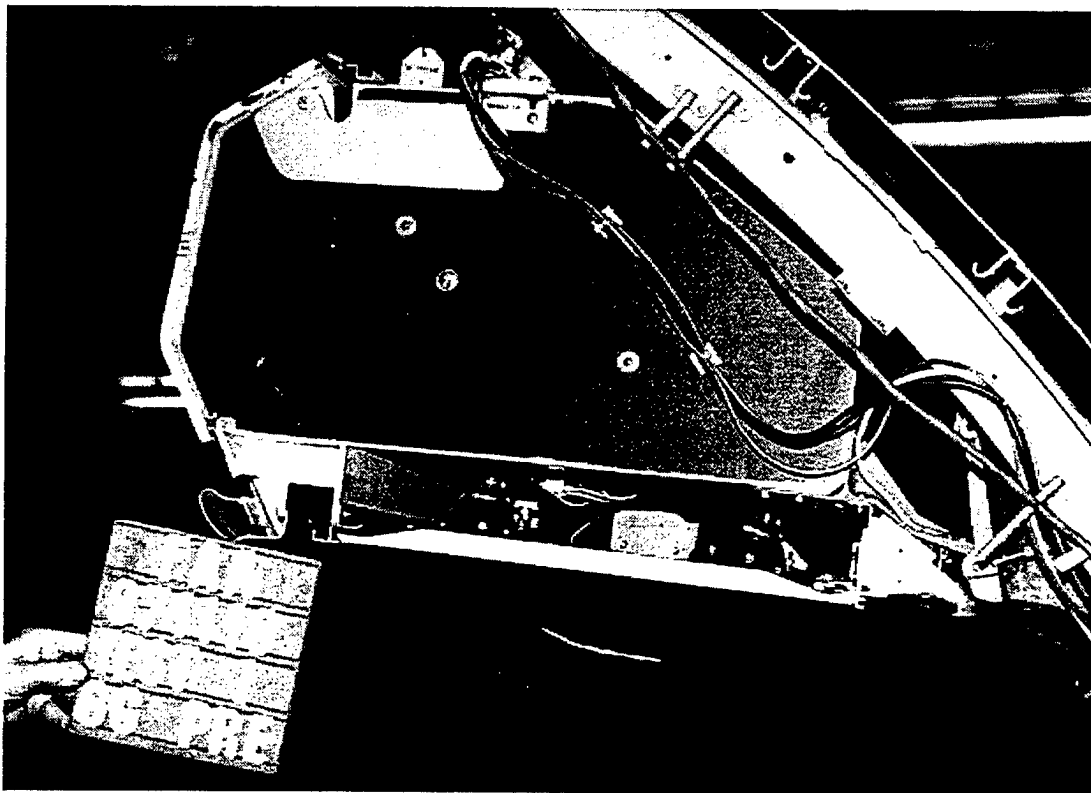


FIGURE 16. PRETEST BIN A FRONT VIEW

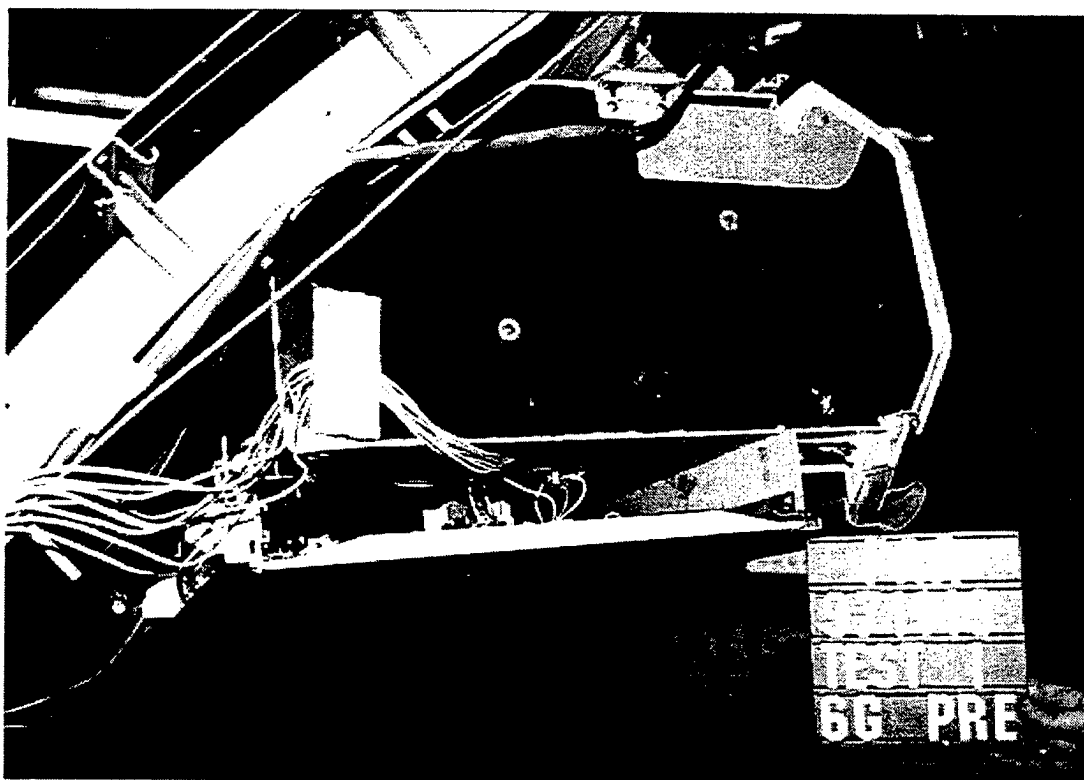


FIGURE 17. PRETEST BIN A REAR VIEW

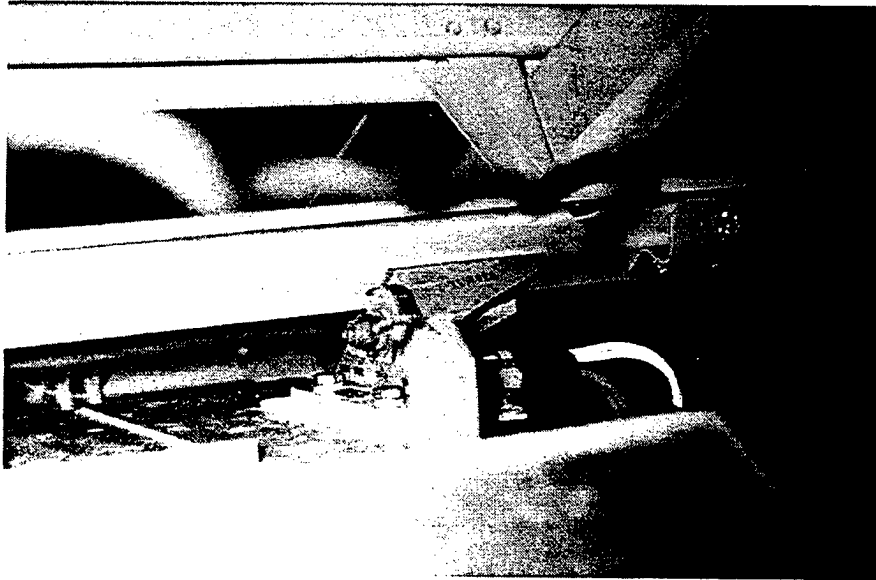


FIGURE 18. PRETEST BIN A FORWARDMOST UPPER ATTACHMENT
SUPPORT NO. 78 VIEW

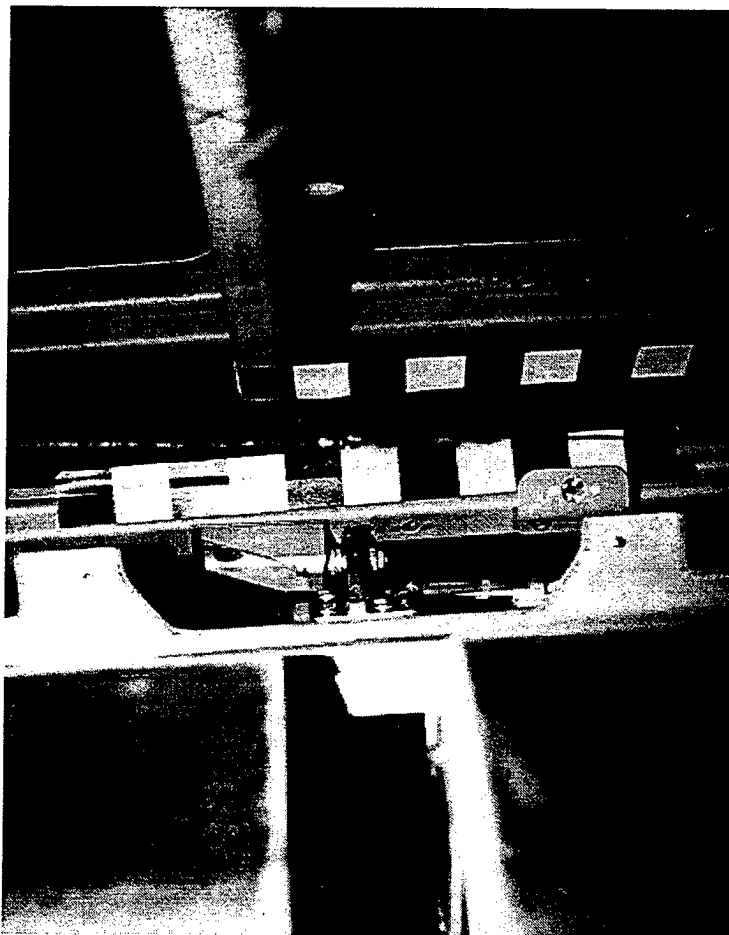


FIGURE 19. PRETEST BIN A MID UPPER ATTACHMENT SUPPORT NO. 76 VIEW

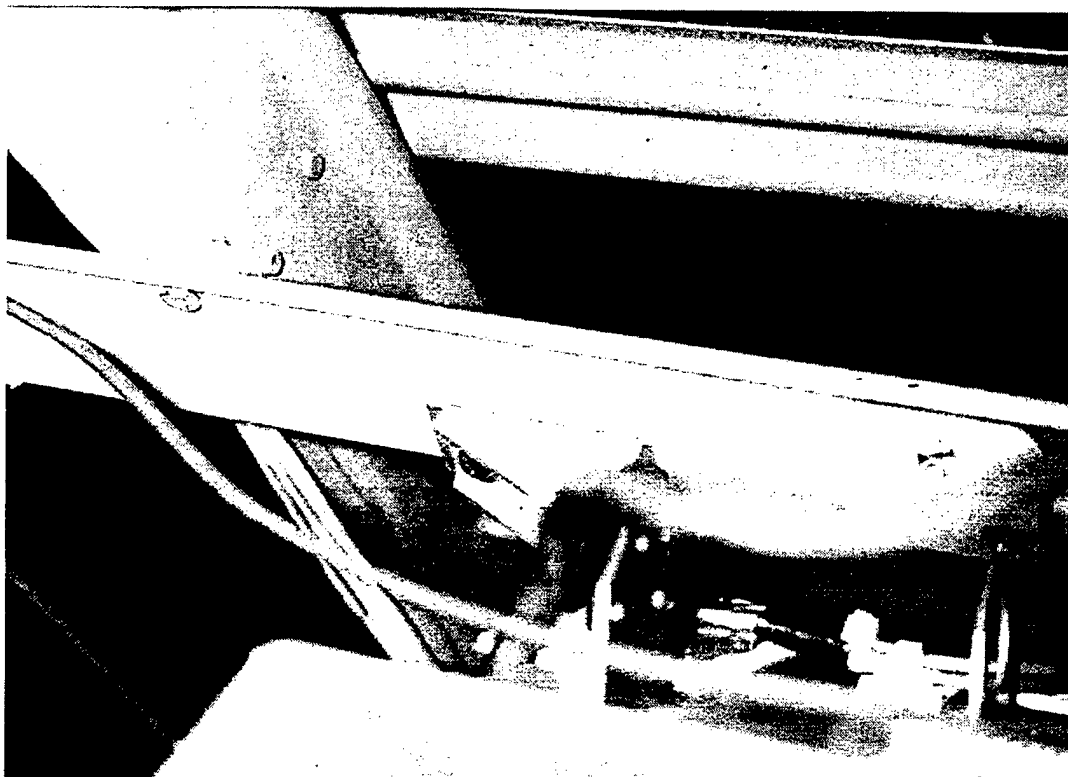


FIGURE 20. PRETEST BIN A AFT UPPER ATTACHMENT SUPPORT NO. 75 VIEW

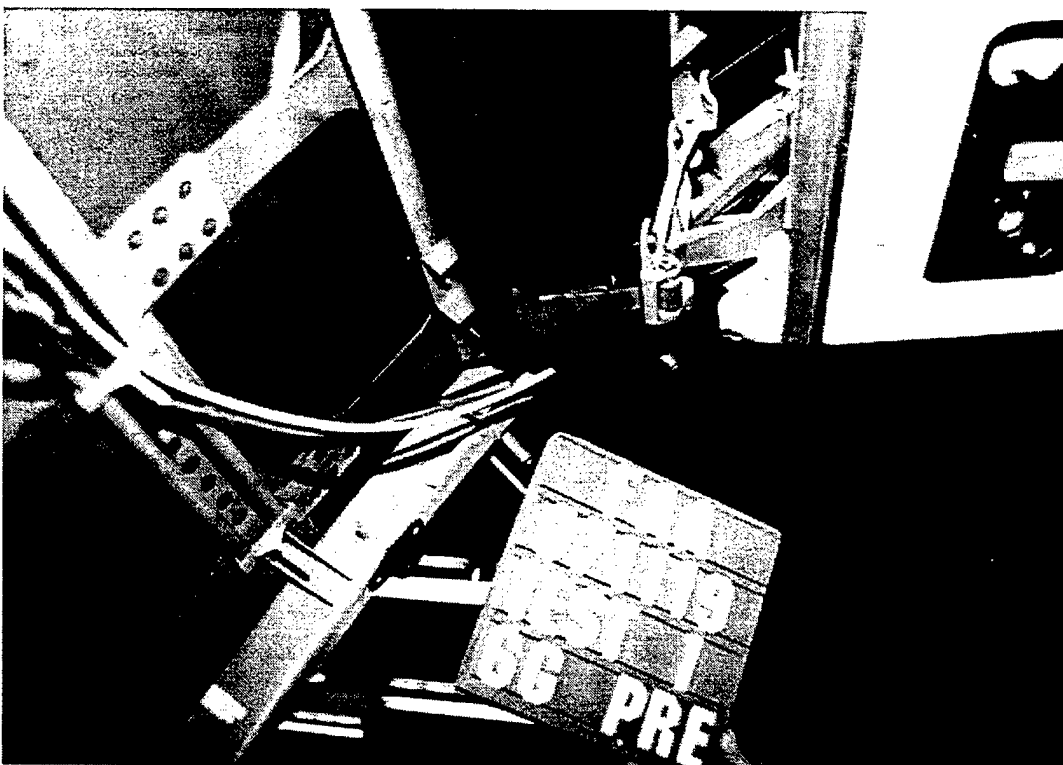


FIGURE 21. PRETEST BIN A FORWARDMOST LOWER ATTACHMENT
SUPPORT NO. 75 VIEW

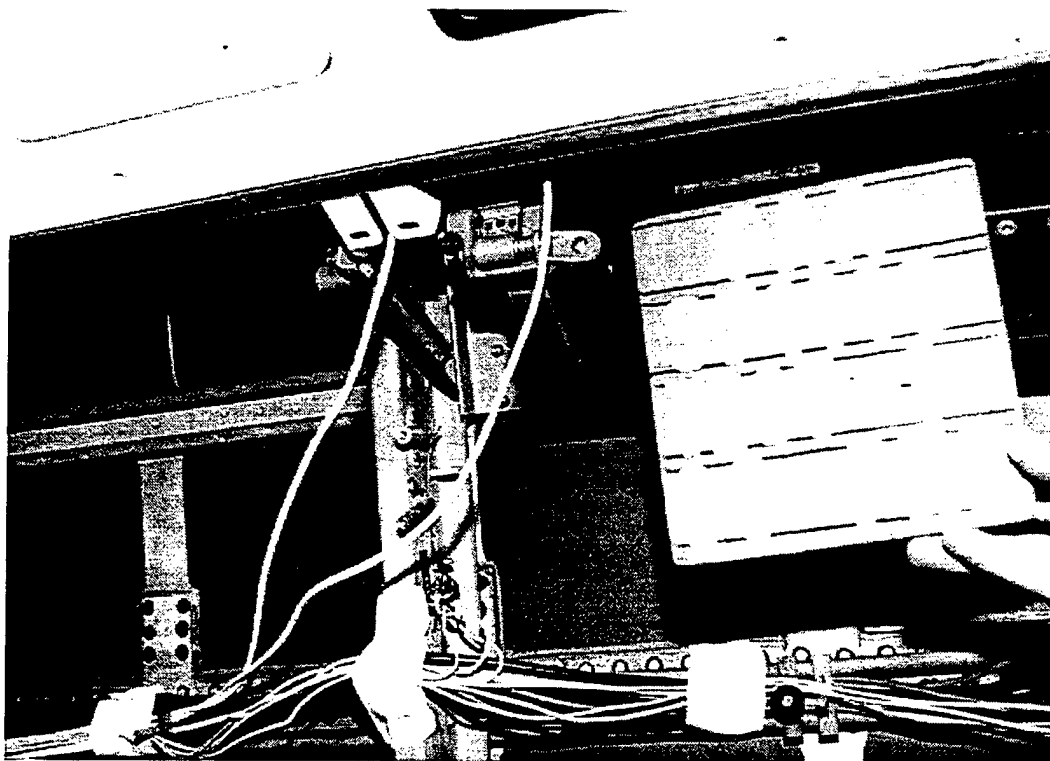


FIGURE 22. PRETEST BIN A MID (BS480) LOWER ATTACHMENT
SUPPORT NO. 76 VIEW

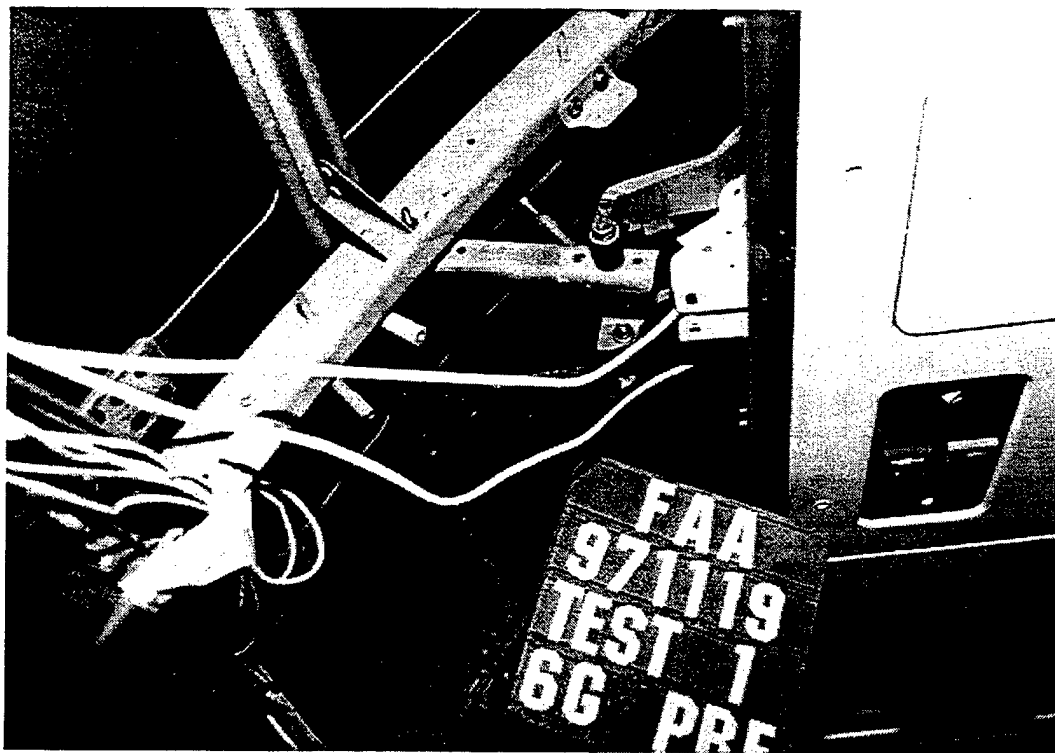


FIGURE 23. PRETEST BIN A AFT (BS480) LOWER ATTACHMENT
SUPPORT NO. 78 VIEW

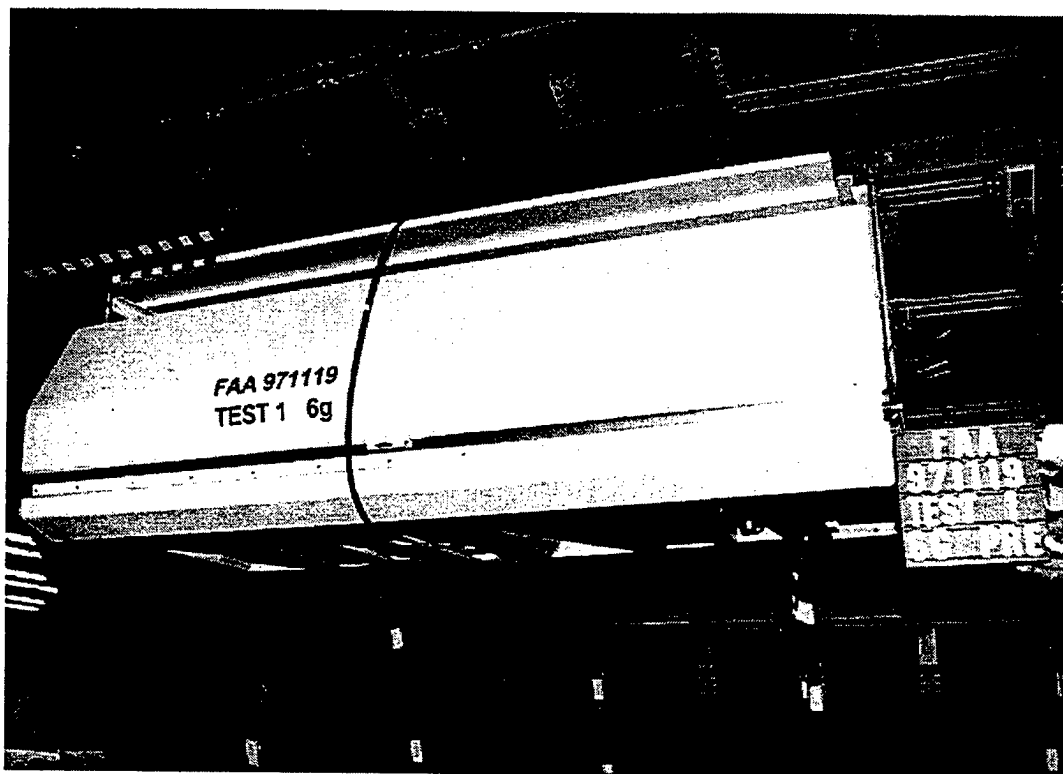


FIGURE 24. PRETEST BIN B OVERALL SIDE VIEW

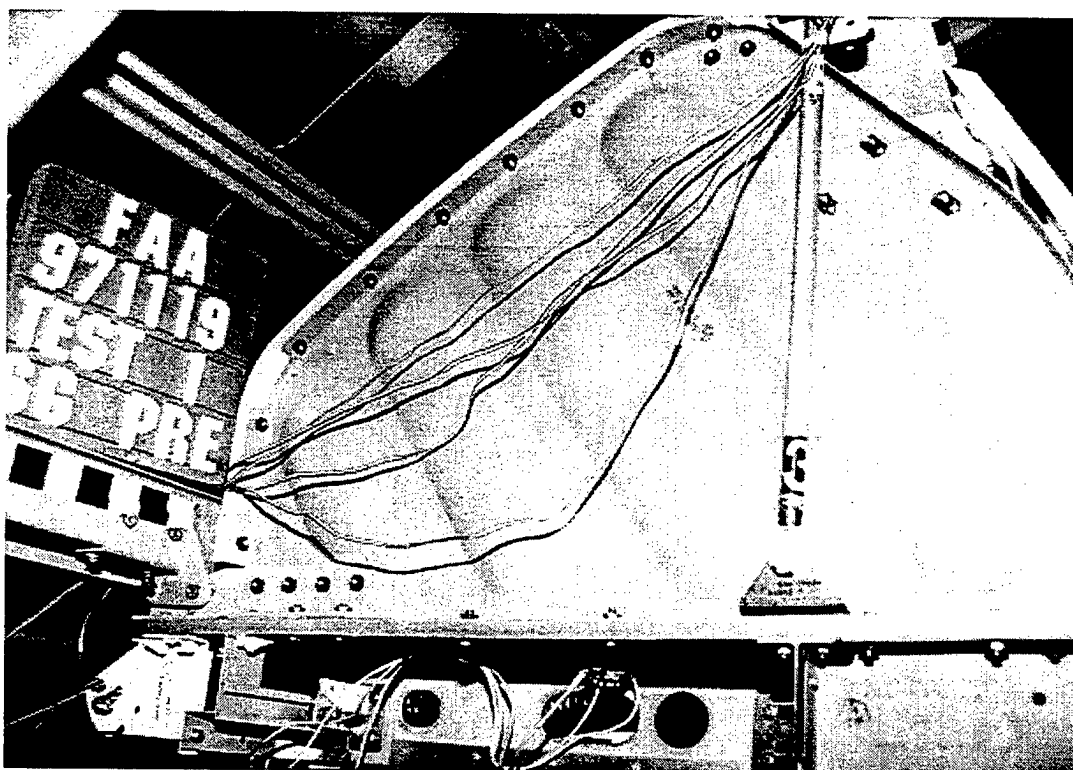


FIGURE 25. PRETEST BIN B FRONT VIEW

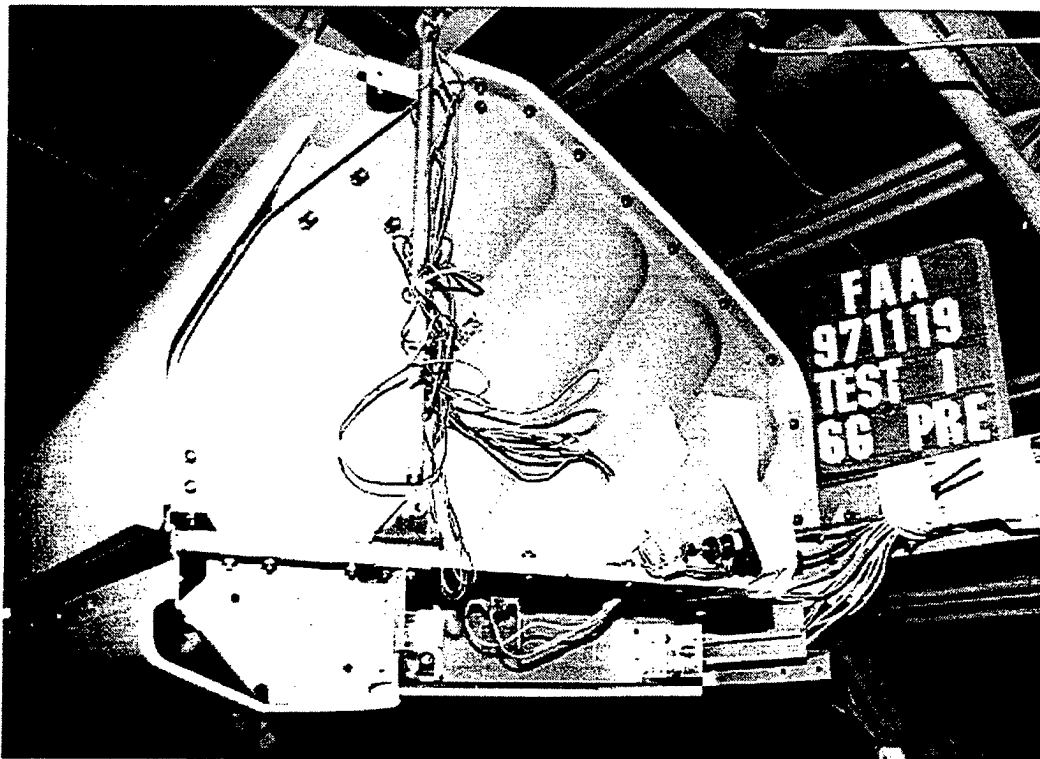


FIGURE 26. PRETEST BIN B REAR VIEW

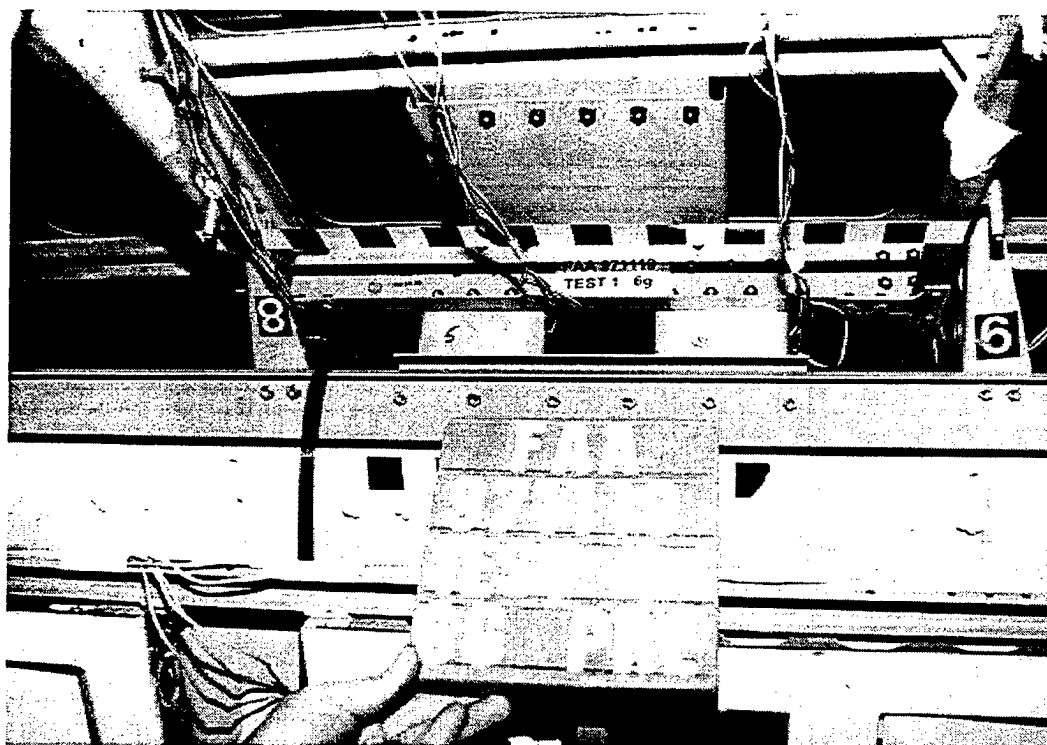


FIGURE 27. PRETEST BIN B ATTACHMENT SUPPORTS NOS. 5, 6, 8, AND 9
BOTTOM VIEW

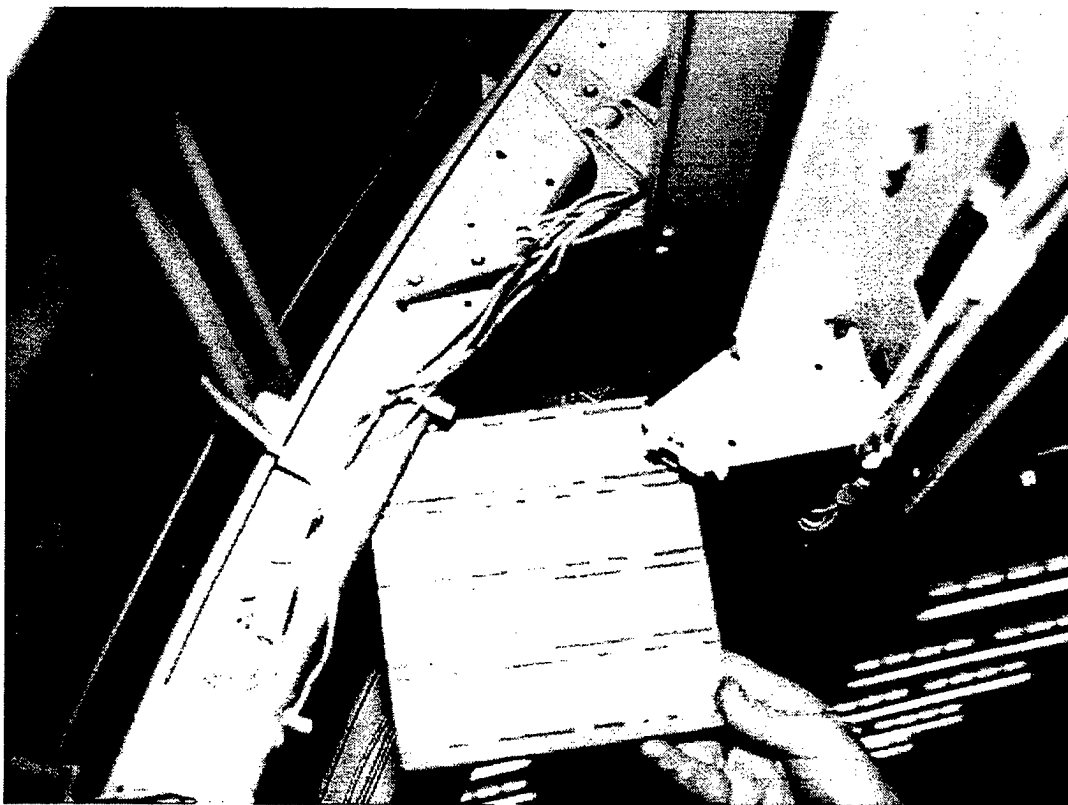


FIGURE 28. PRETEST BIN B ATTACHMENT SUPPORT NO. 7 FRONT VIEW



FIGURE 29. PRETEST BIN B ATTACHMENT SUPPORT NO. 8 FRONT LOWER VIEW



FIGURE 30. PRETEST BIN B ATTACHMENT SUPPORT NO. 9 FRONT LOWER VIEW

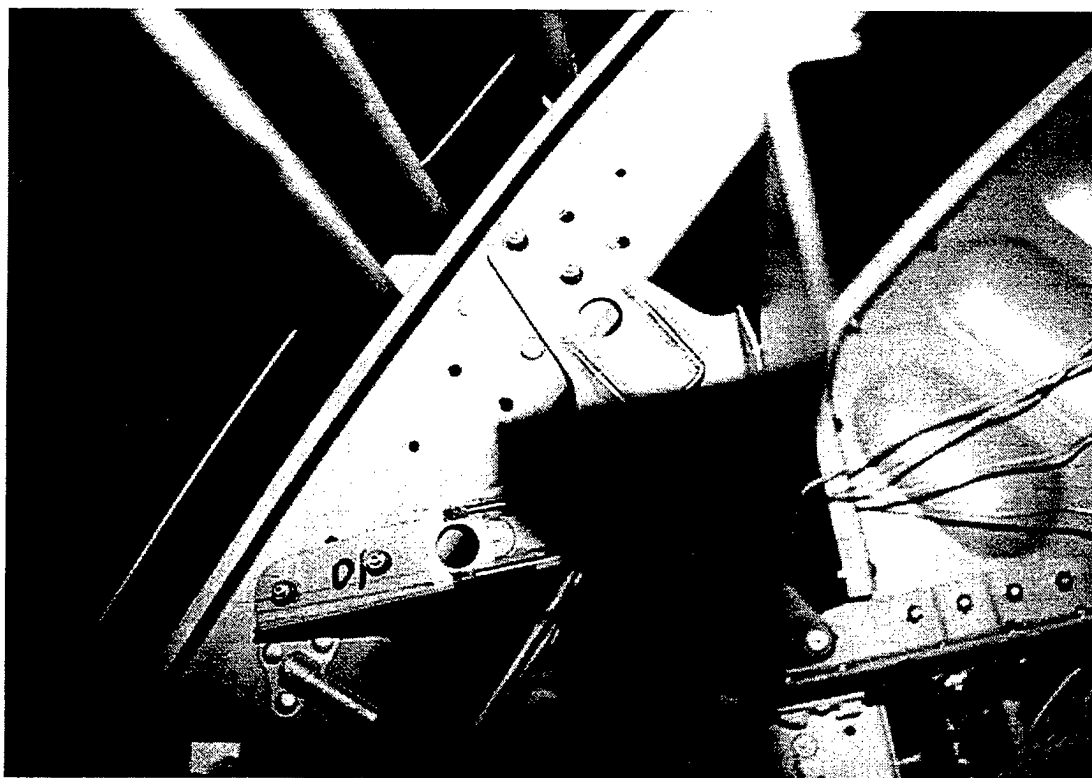


FIGURE 31. PRETEST BIN B ATTACHMENT SUPPORT NO. 10 FRONT VIEW

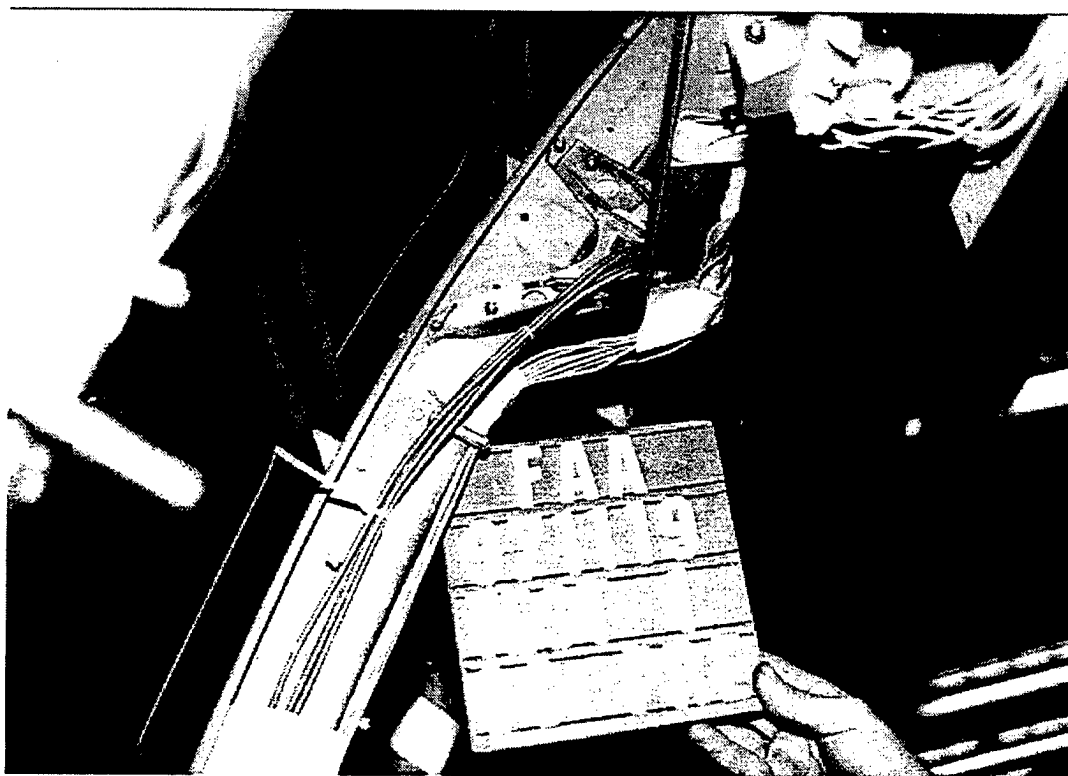


FIGURE 32. PRETEST BIN B ATTACHMENT SUPPORT NO. 11 FRONT LOWER VIEW

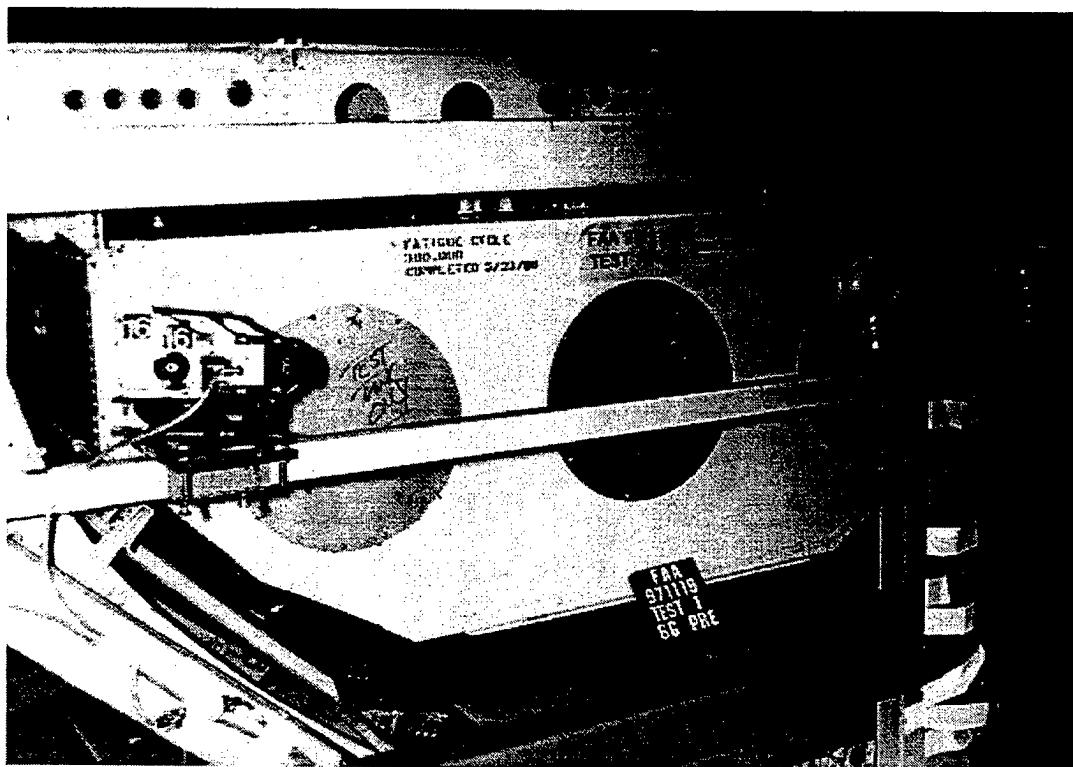


FIGURE 33. PRETEST AUXILIARY FUEL TANK FRONT OVERALL VIEW



FIGURE 34. PRETEST AUXILIARY FUEL TANK FRONT VIEW 1



FIGURE 35. PRETEST AUXILIARY FUEL TANK FRONT VIEW 2

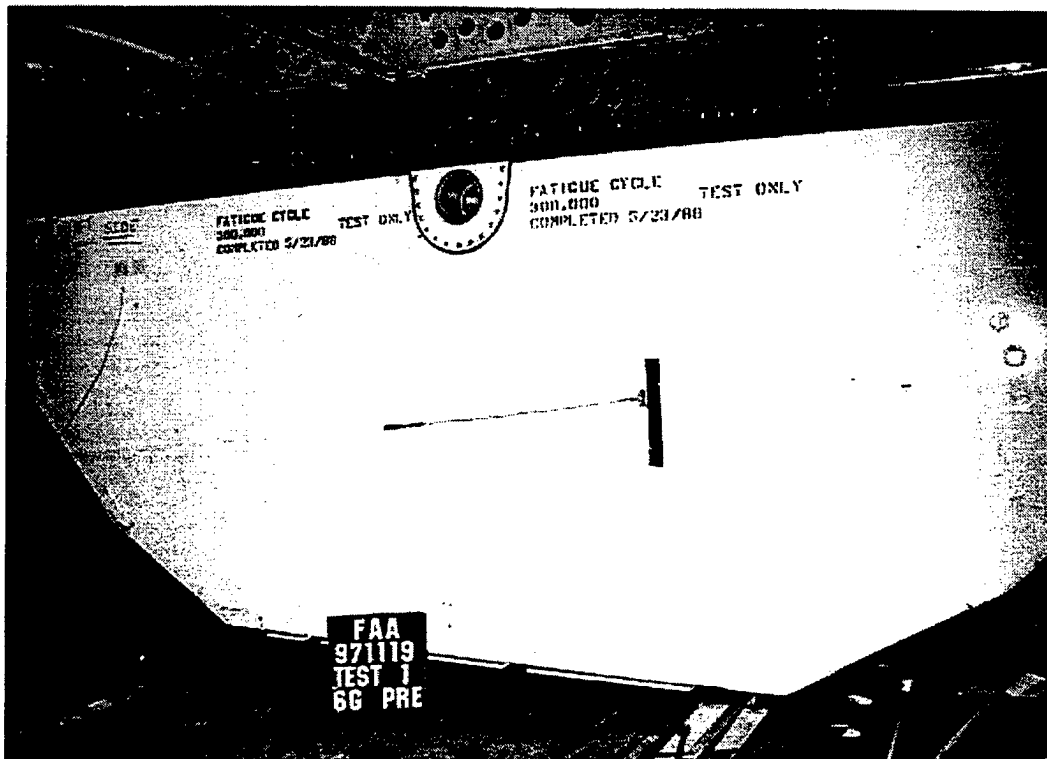


FIGURE 36. PRETEST AUXILIARY FUEL TANK REAR OVERALL VIEW

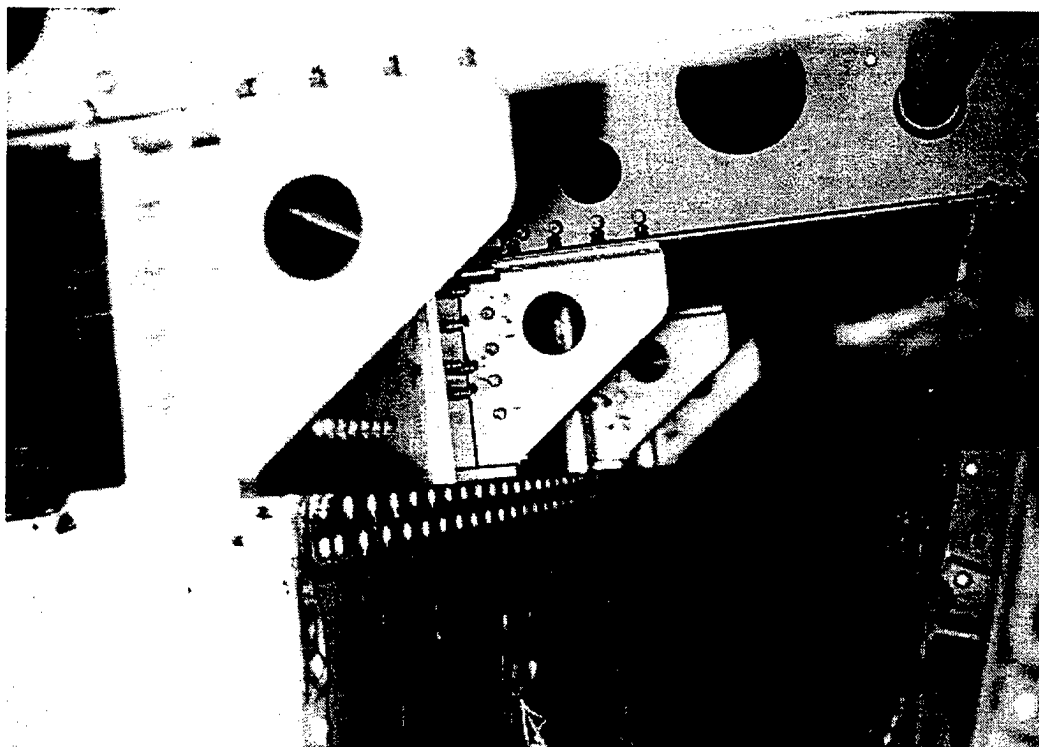


FIGURE 37. PRETEST AUXILIARY FUEL TANK LEFT ATTACHMENT FRAMEWORK
FRONT OUTER VIEW

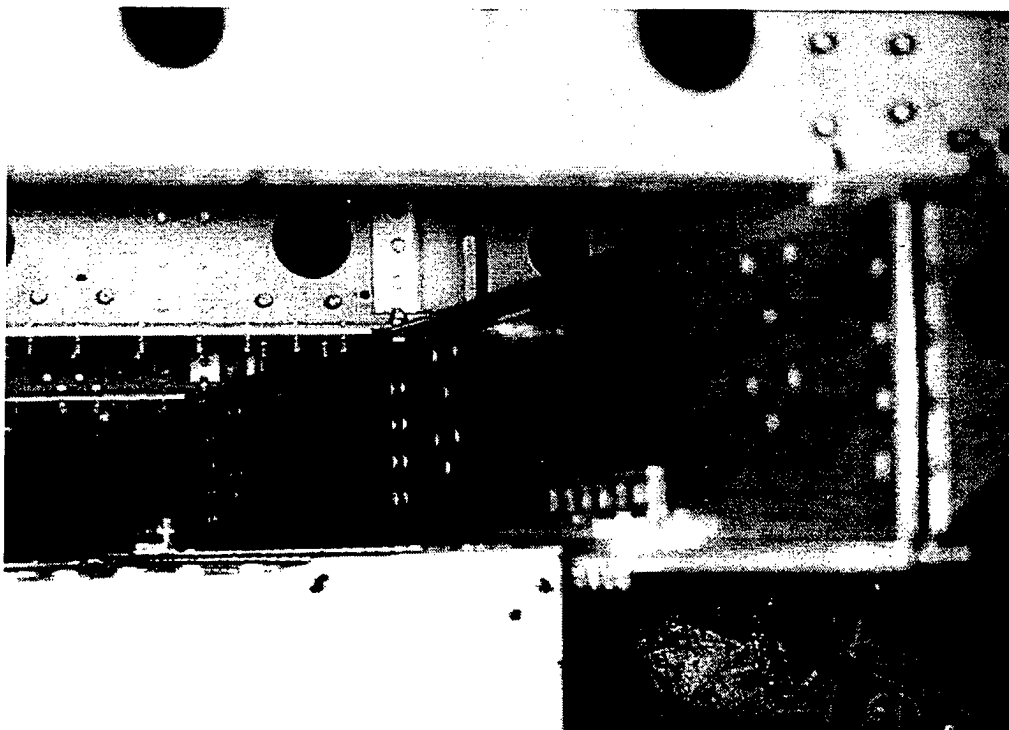


FIGURE 38. PRETEST AUXILIARY FUEL TANK LEFT ATTACHMENT FRAMEWORK
FRONT INNER VIEW

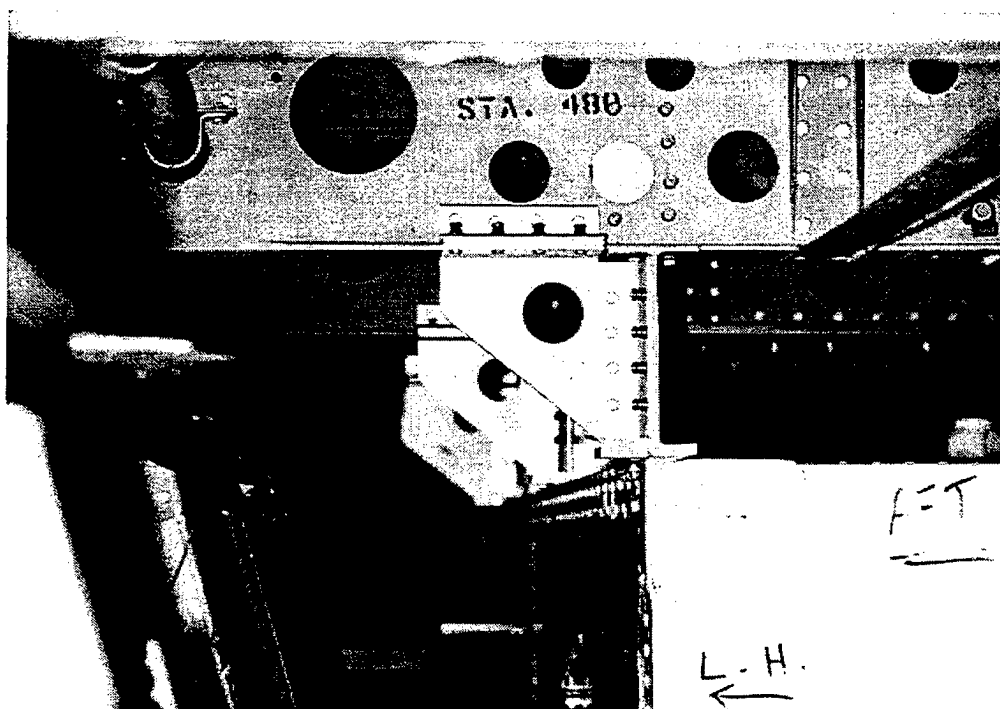


FIGURE 39. PRETEST AUXILIARY FUEL TANK LEFT ATTACHMENT FRAMEWORK
REAR OUTER VIEW

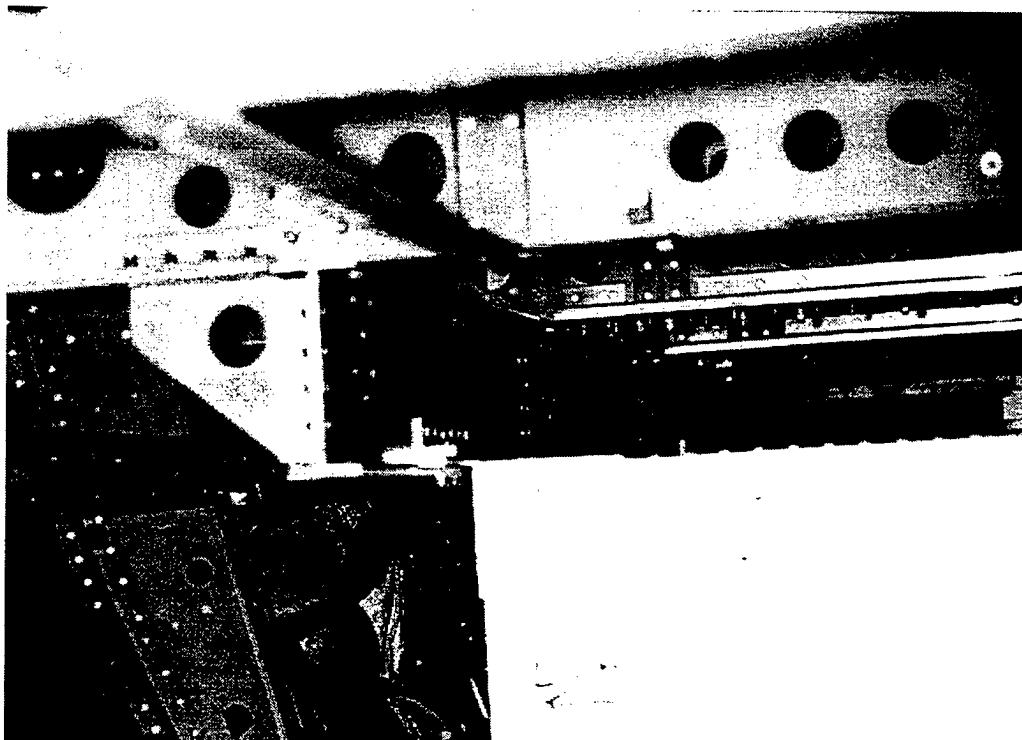


FIGURE 40. PRETEST AUXILIARY FUEL TANK LEFT ATTACHMENT FRAMEWORK
REAR INNER VIEW

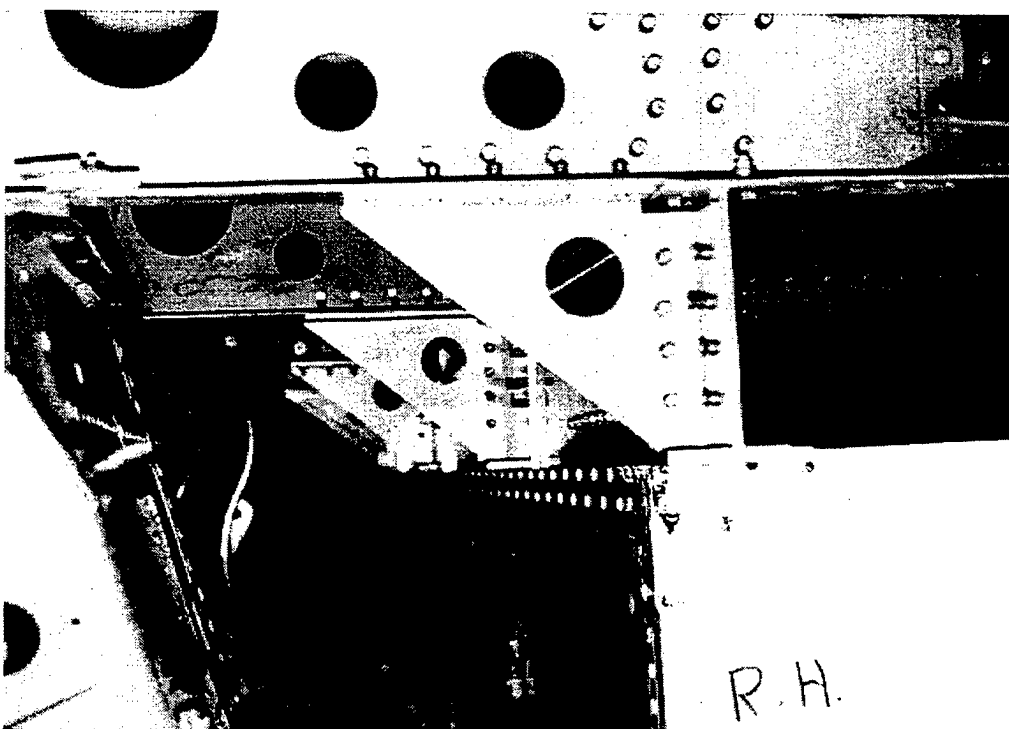


FIGURE 41. PRETEST AUXILIARY FUEL TANK RIGHT ATTACHMENT FRAMEWORK
FRONT OUTER VIEW

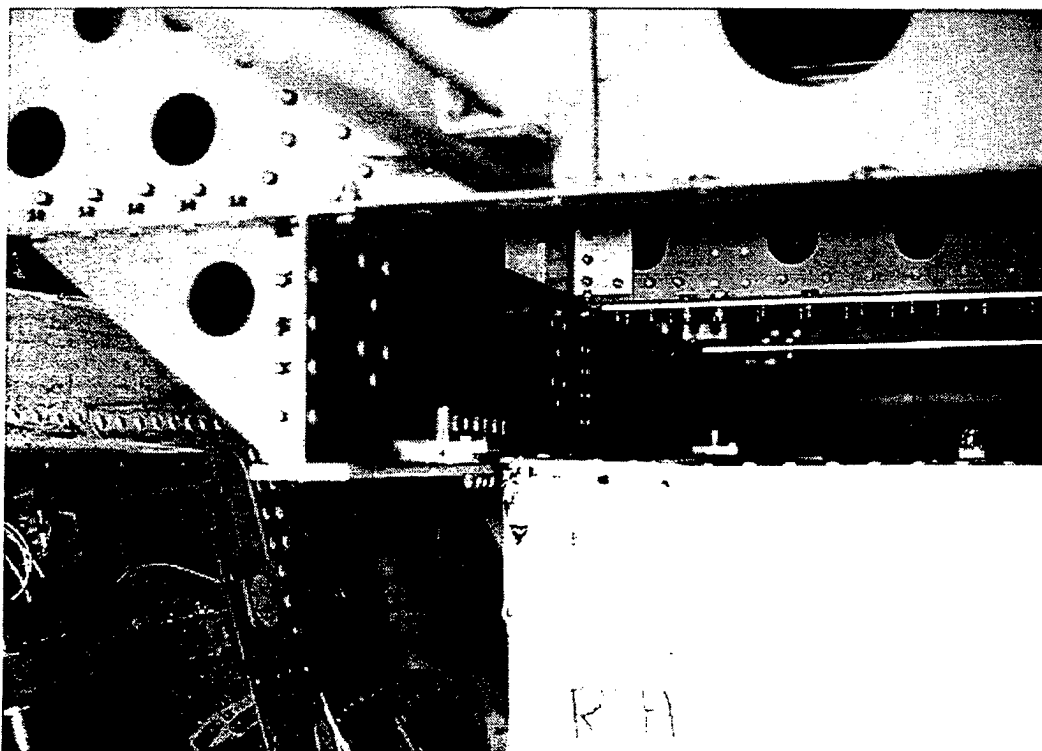


FIGURE 42. PRETEST AUXILIARY FUEL TANK RIGHT ATTACHMENT FRAMEWORK
FRONT INNER VIEW

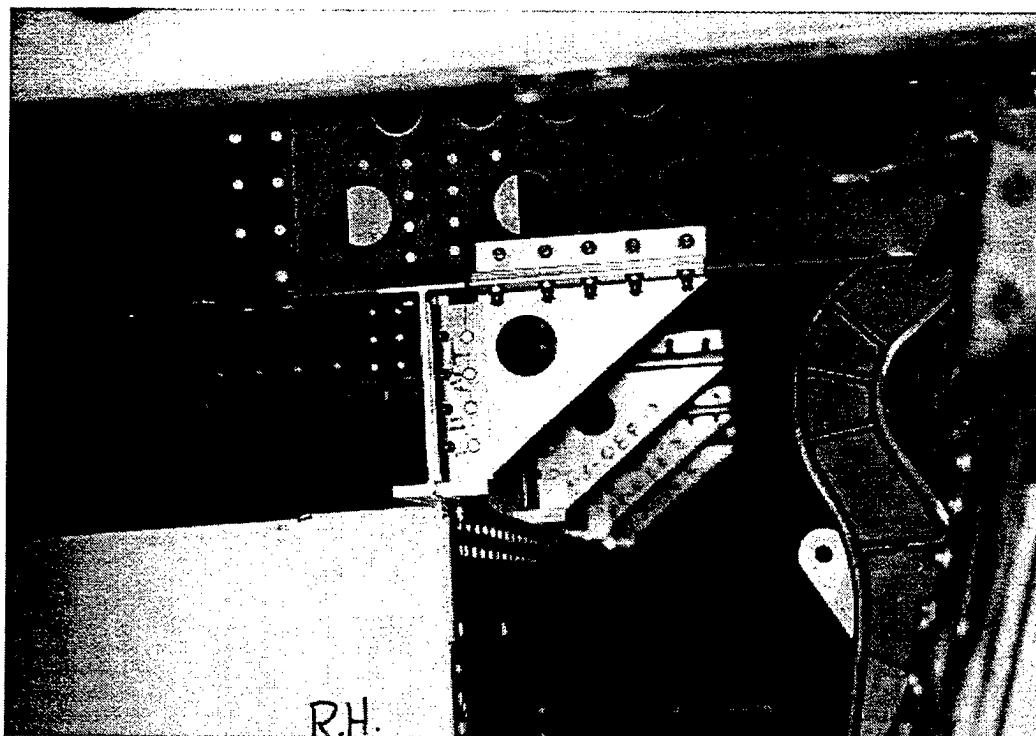


FIGURE 43. PRETEST AUXILIARY FUEL TANK RIGHT ATTACHMENT FRAMEWORK
REAR OUTER VIEW

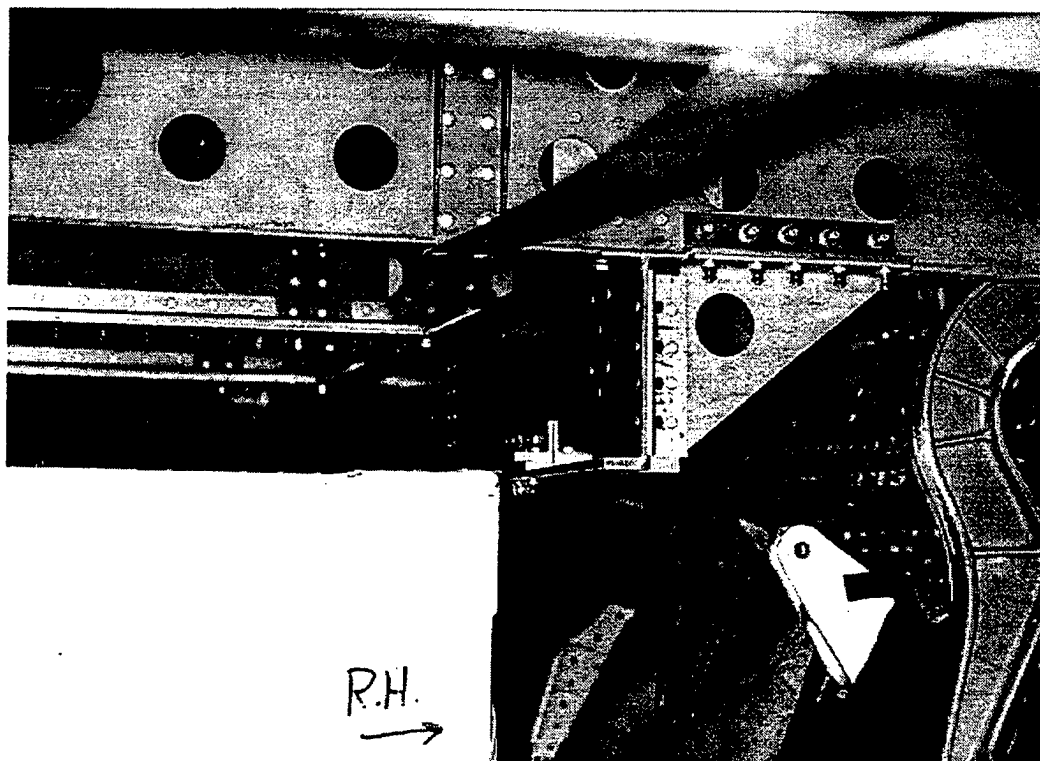


FIGURE 44. PRETEST AUXILIARY FUEL TANK RIGHT ATTACHMENT FRAMEWORK
REAR INNER VIEW

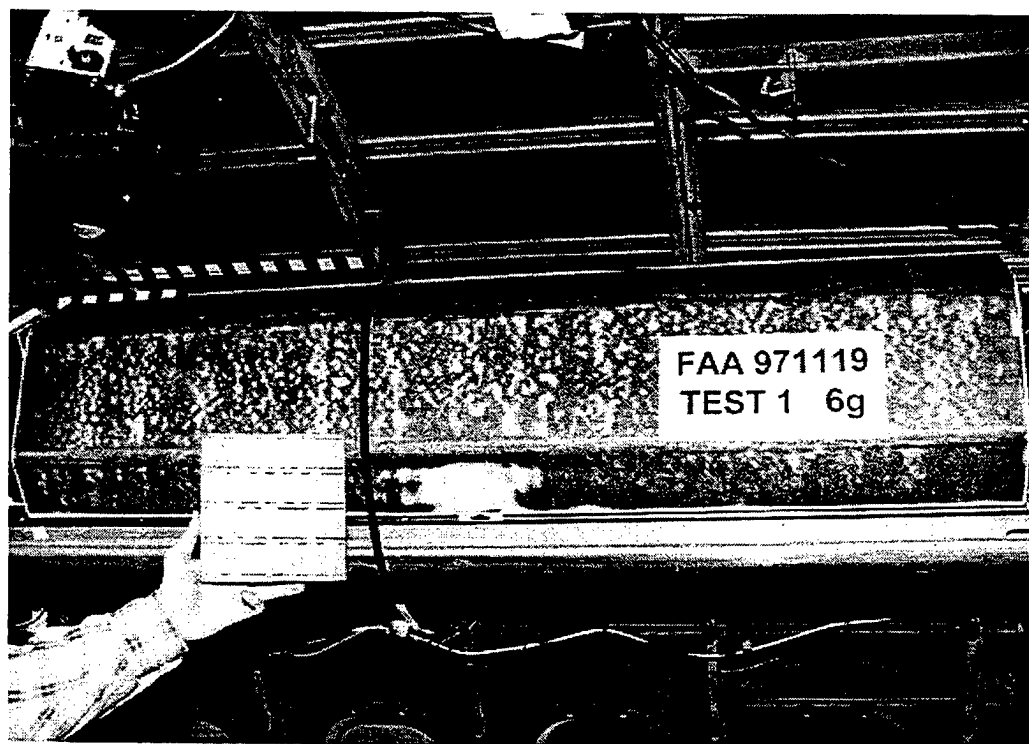


FIGURE 45. POSTTEST BIN A FORE SECTION RIGHT SIDE VIEW



FIGURE 46. POSTTEST BIN A AFT SECTION RIGHT SIDE VIEW

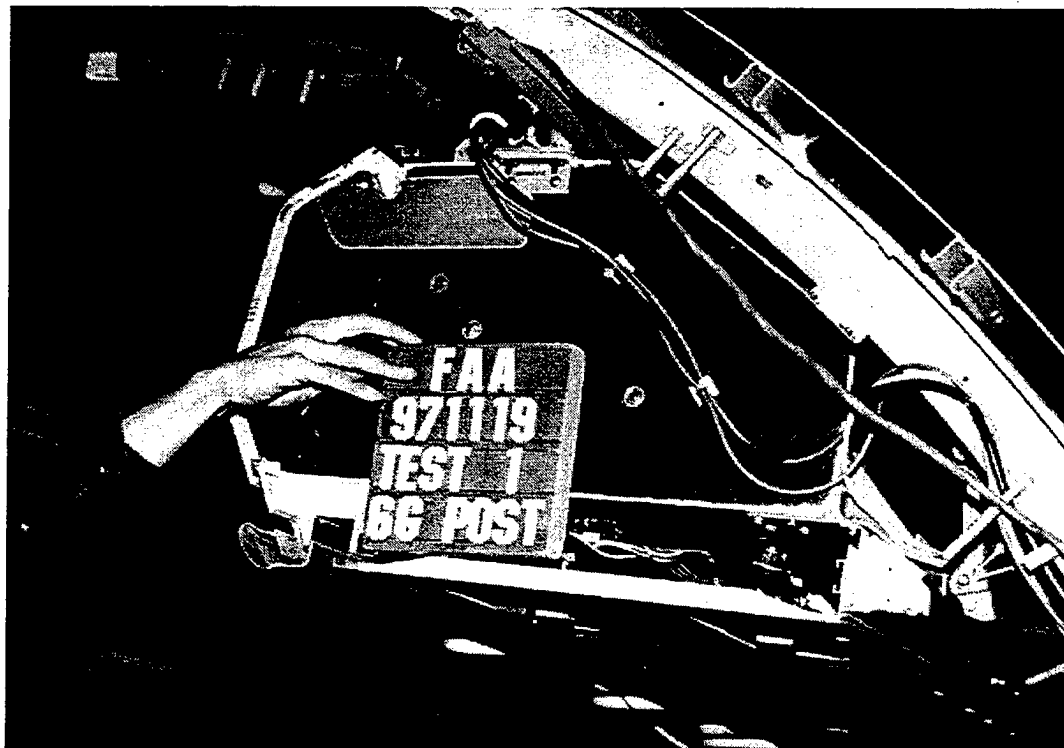


FIGURE 47. POSTTEST BIN A FRONT VIEW

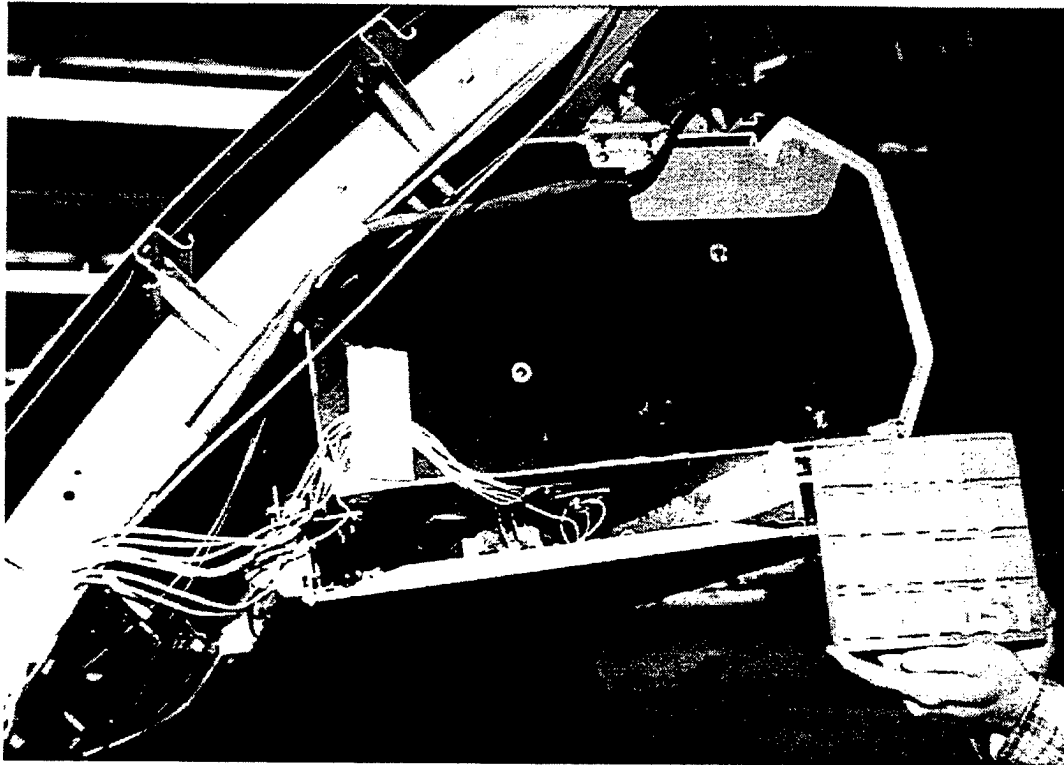


FIGURE 48. POSTTEST BIN A REAR VIEW

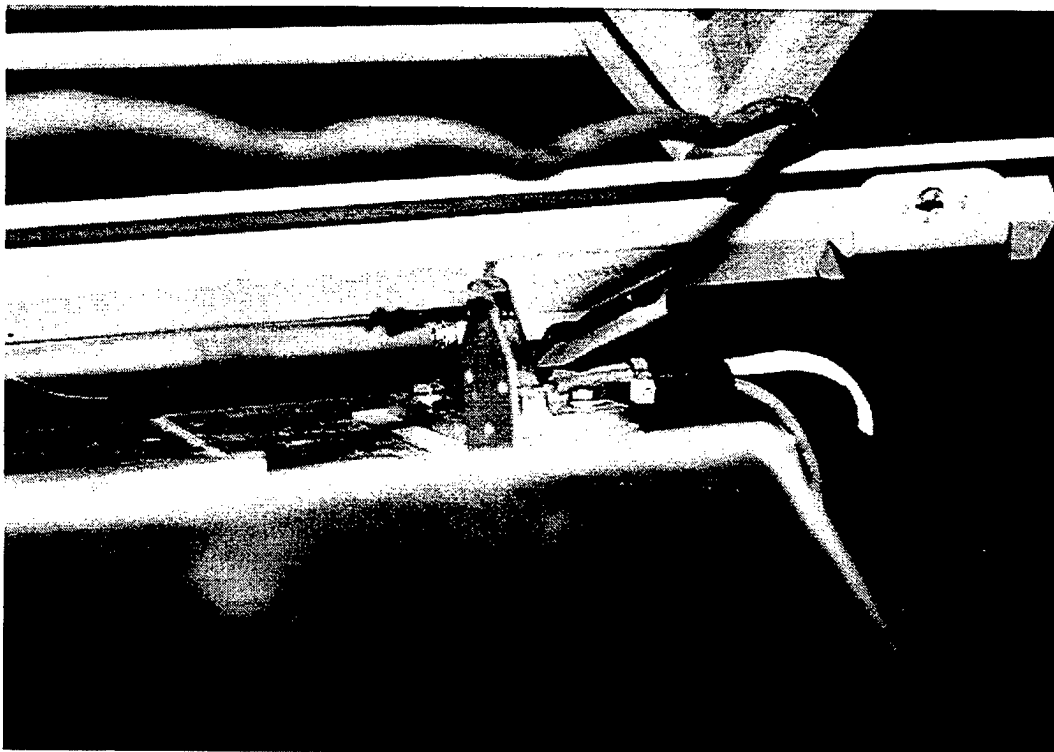


FIGURE 49. POSTTEST BIN A FORWARDMOST UPPER ATTACHMENT
SUPPORT NO. 78 VIEW

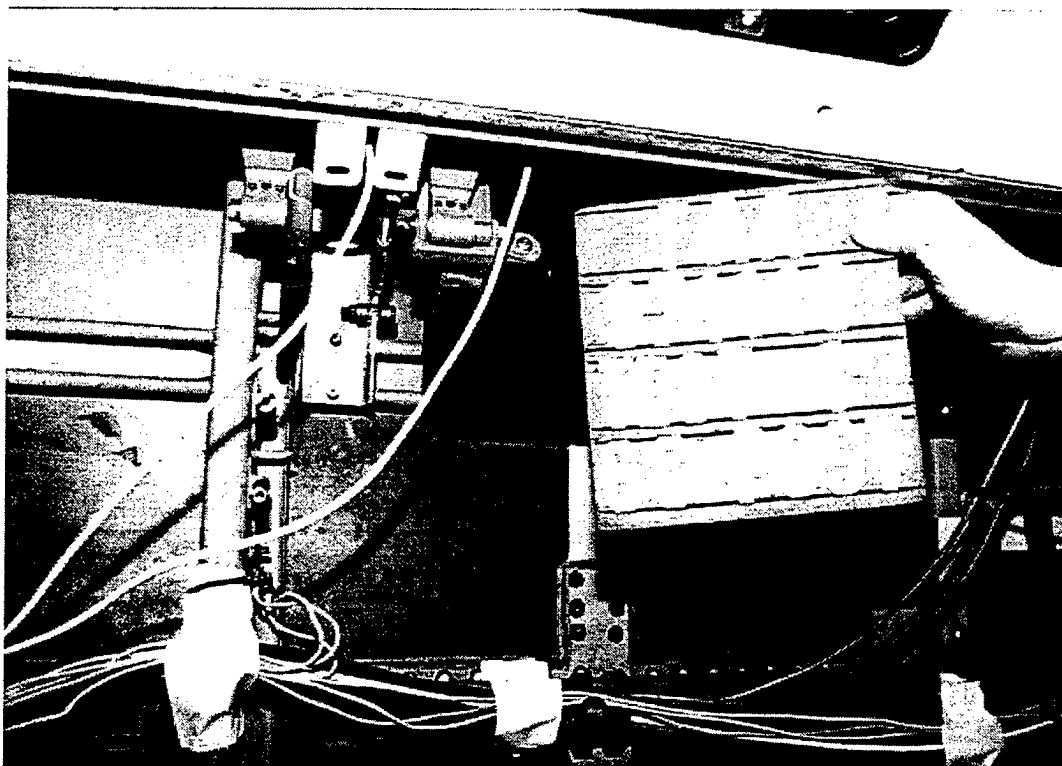


FIGURE 50. POSTTEST BIN A MID/AFT (BS480) LOWER ATTACHMENT SUPPORTS NOS. 76 AND 78 VIEW

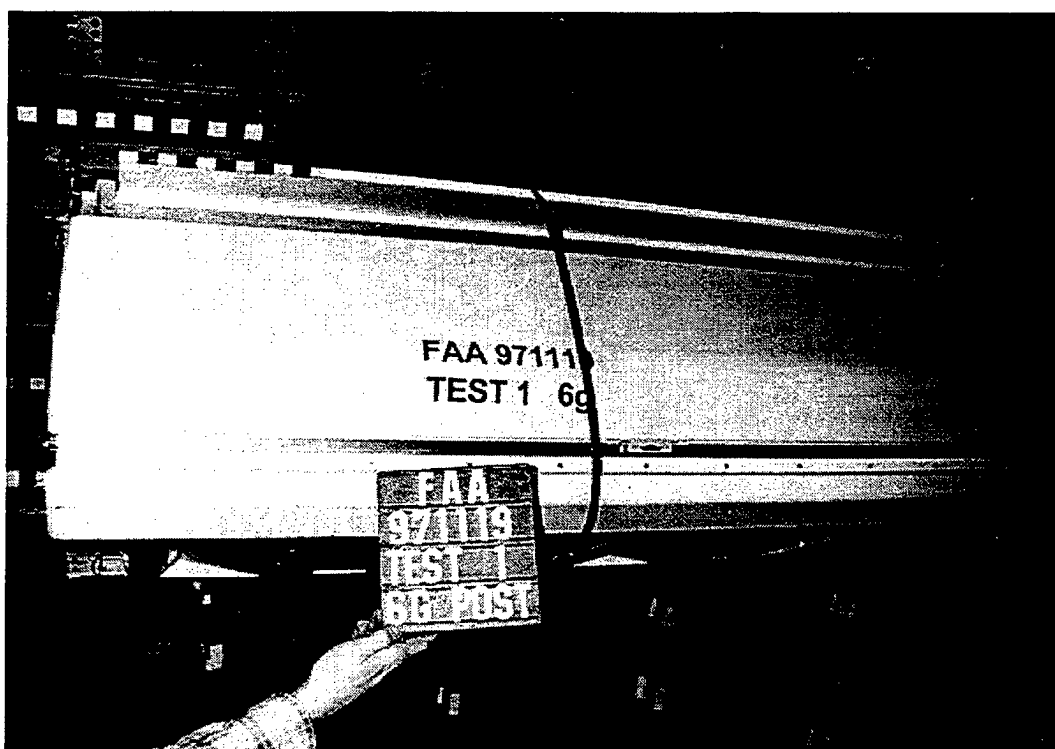


FIGURE 51. POSTTEST BIN B OVERALL SIDE VIEW

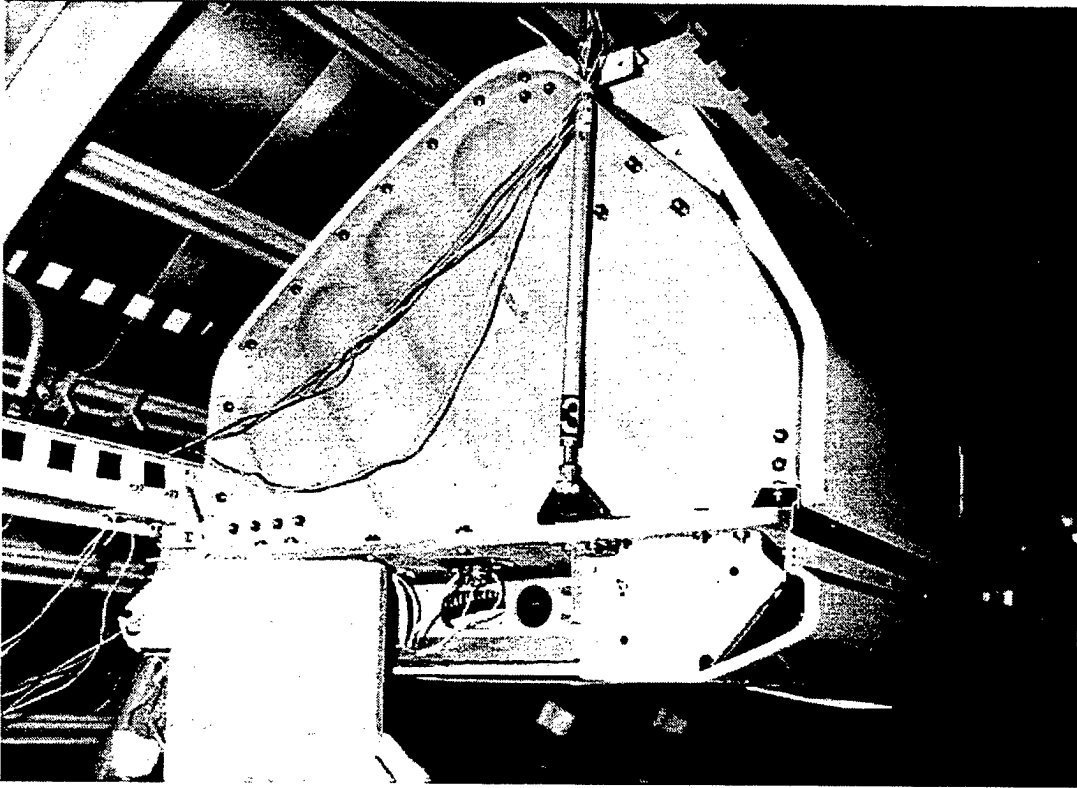


FIGURE 52. POSTTEST BIN B FRONT VIEW

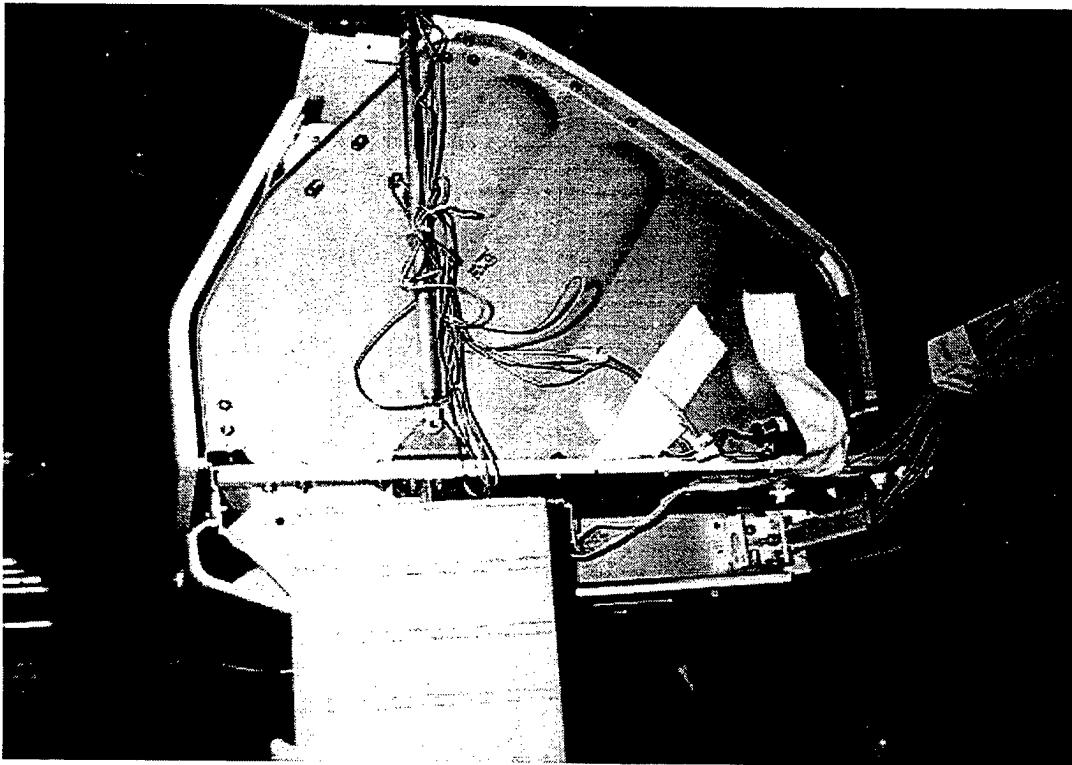


FIGURE 53. POSTTEST BIN B REAR VIEW

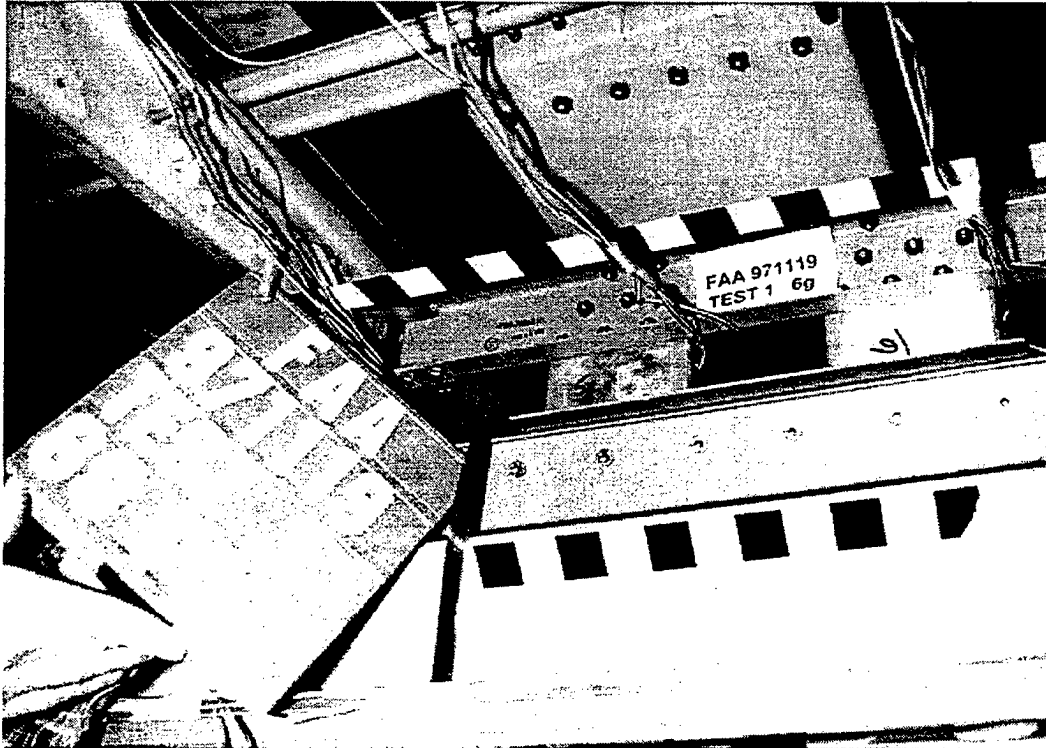


FIGURE 54. POSTTEST BIN B ATTACHMENT SUPPORTS NOS. 5 AND 6
BOTTOM VIEW

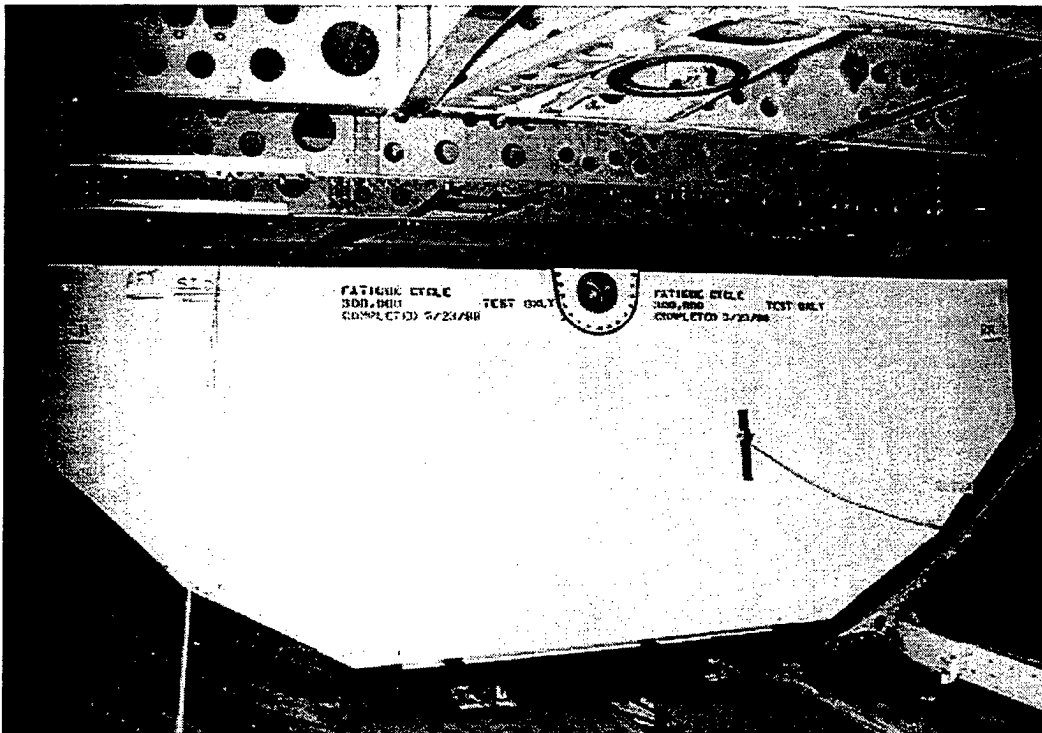


FIGURE 55. POSTTEST AUXILIARY FUEL TANK REAR VIEW

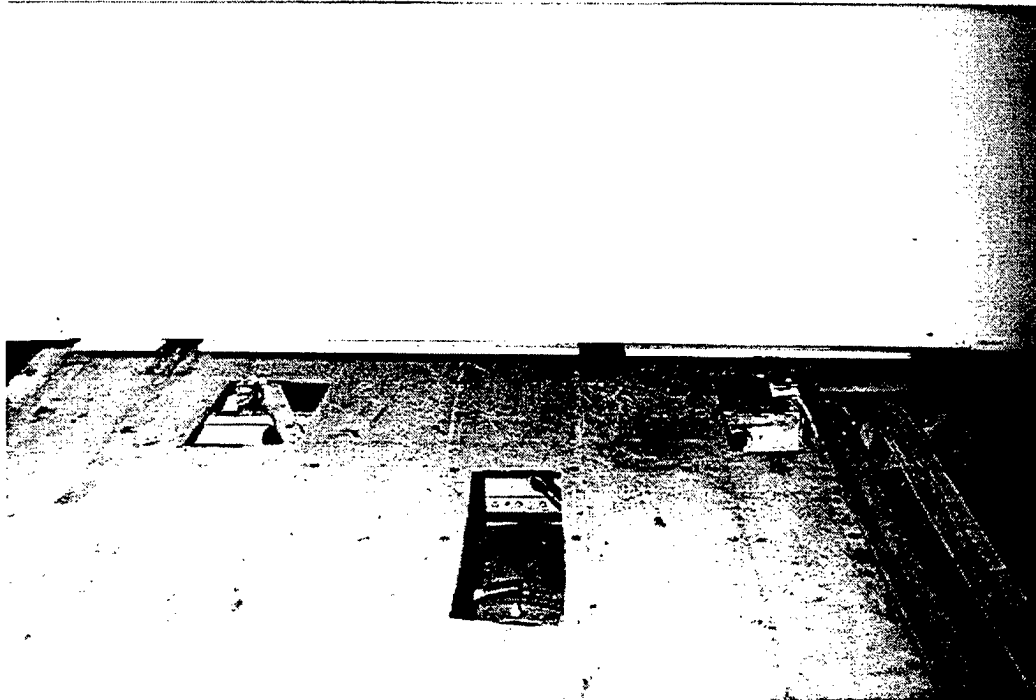


FIGURE 56. POSTTEST AUXILIARY FUEL TANK FLOOR ATTACHMENT STRAPS
REAR VIEW

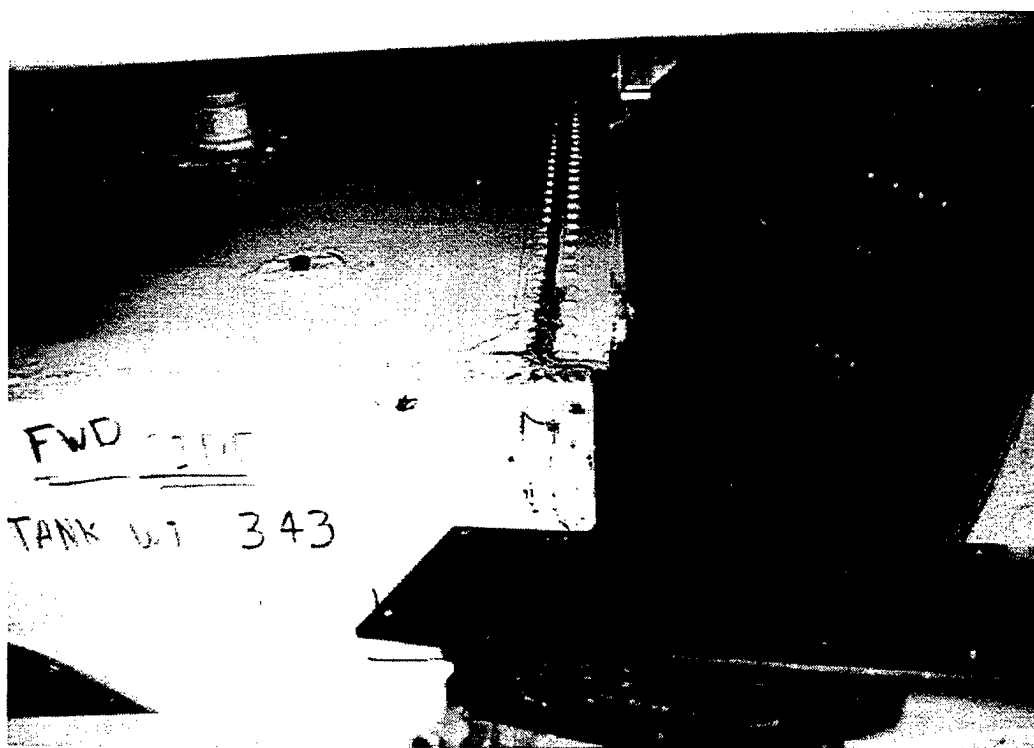


FIGURE 57. POSTTEST AUXILIARY FUEL TANK FRONT UPPER LEFT CORNER
FRONT VIEW



FIGURE 58. POSTTEST AUXILIARY FUEL TANK FRONT UPPER LEFT CORNER
FRONT ANGLE VIEW 1

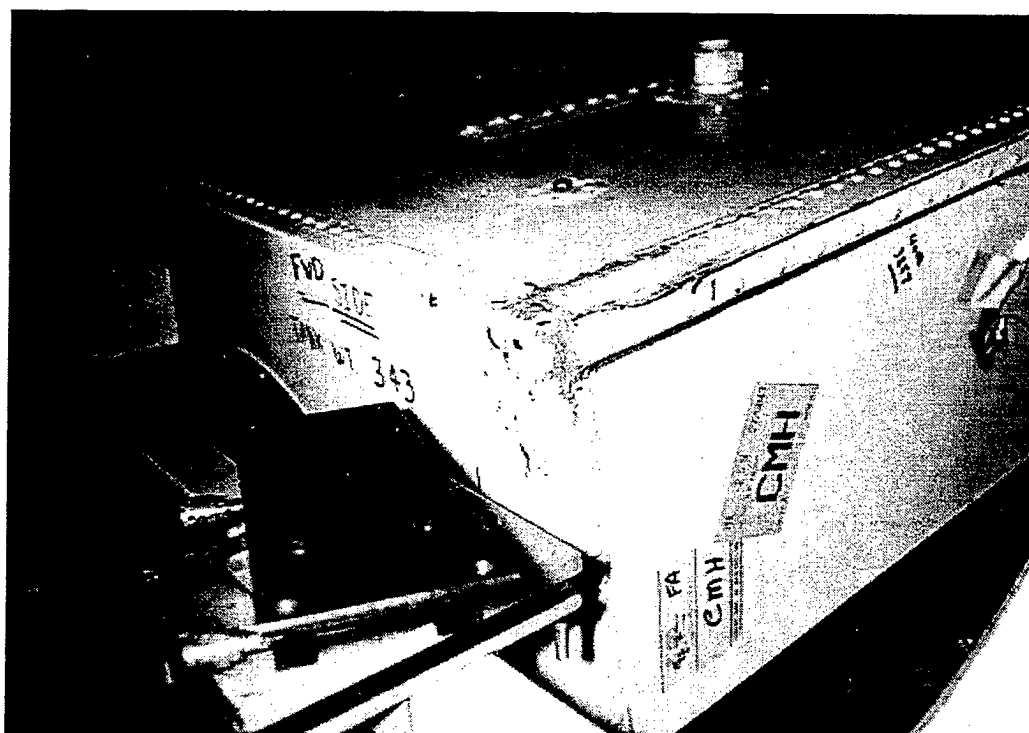


FIGURE 59. POSTTEST AUXILIARY FUEL TANK FRONT UPPER LEFT CORNER
FRONT ANGLE VIEW 2

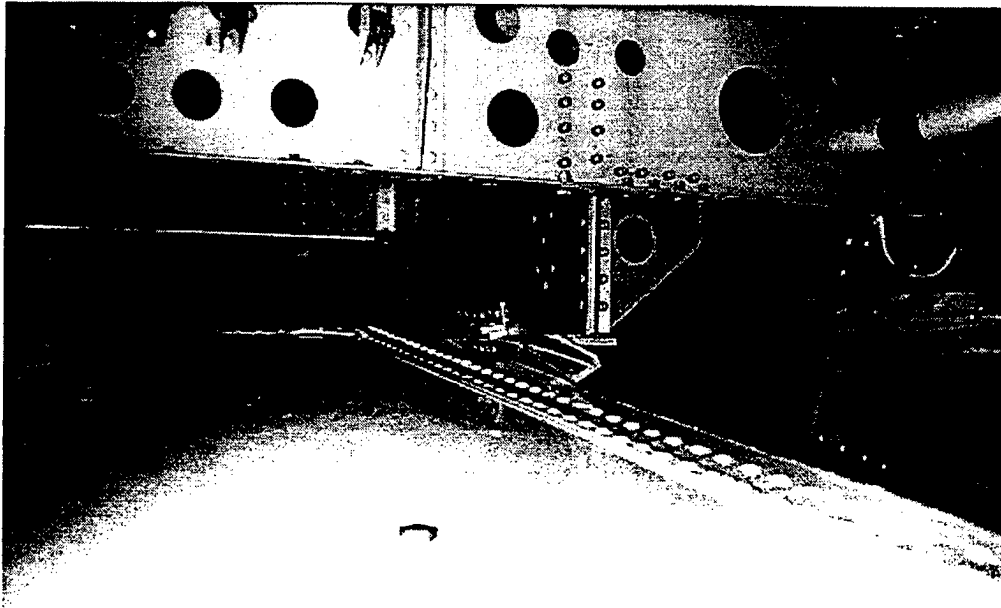


FIGURE 60. POSTTEST AUXILIARY FUEL TANK LEFT ATTACHMENT
FRAMEWORK FRONT VIEW

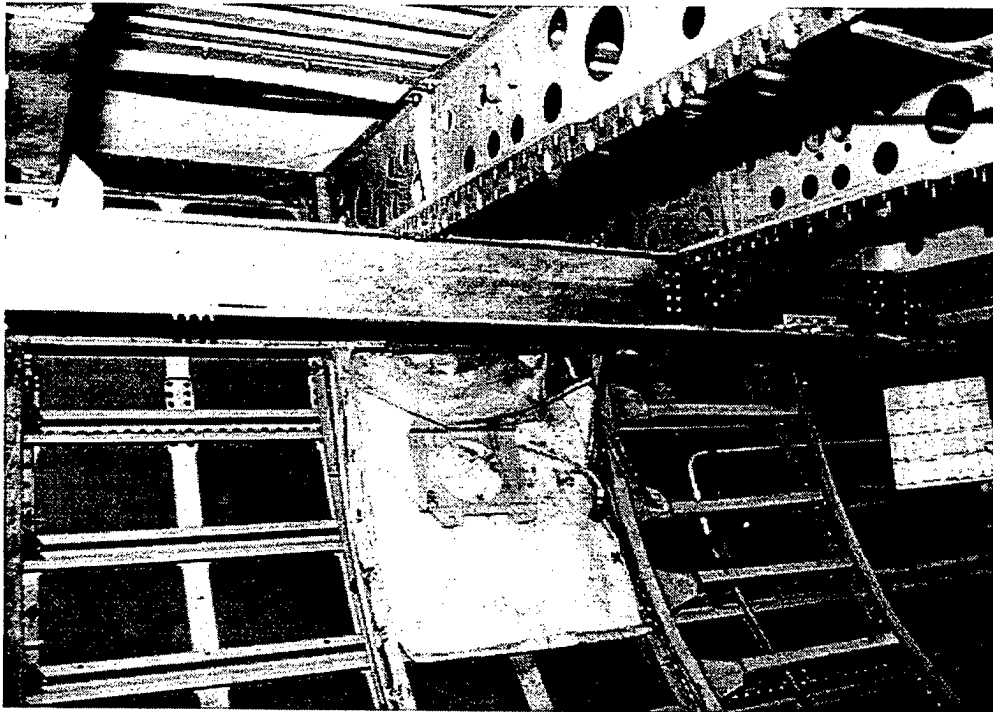


FIGURE 61. POSTTEST AUXILIARY FUEL TANK LEFT ATTACHMENT
FRAMEWORK OVERALL SIDE VIEW

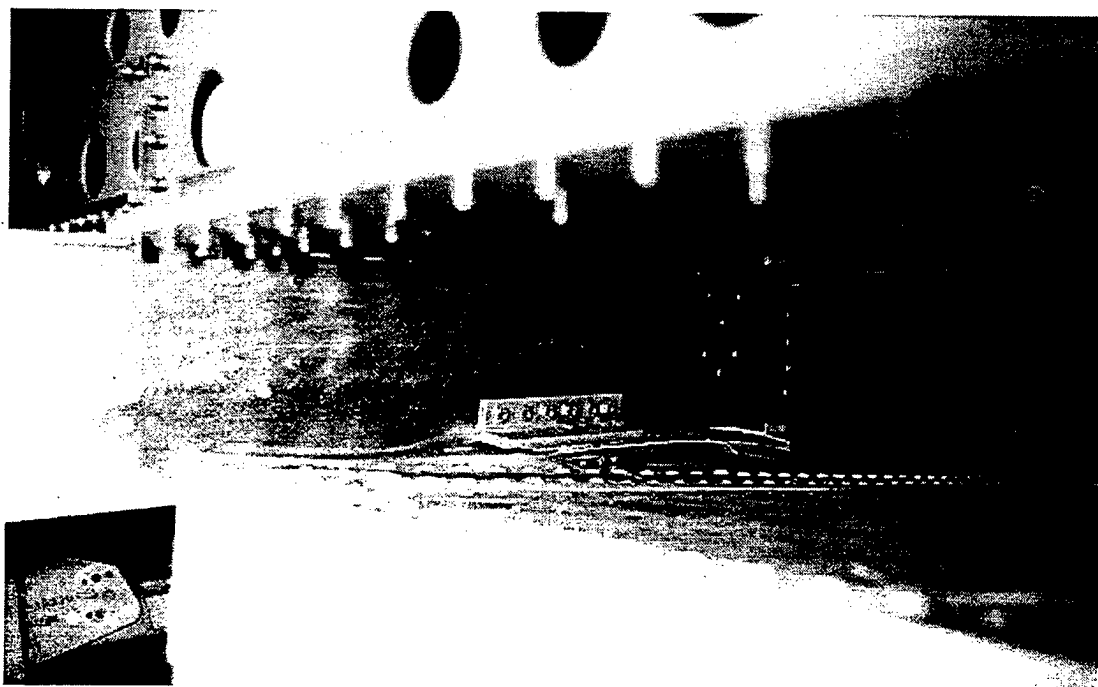


FIGURE 62. POSTTEST AUXILIARY FUEL TANK LEFT FRONT ATTACHMENT
FRAMEWORK SIDE VIEW 1

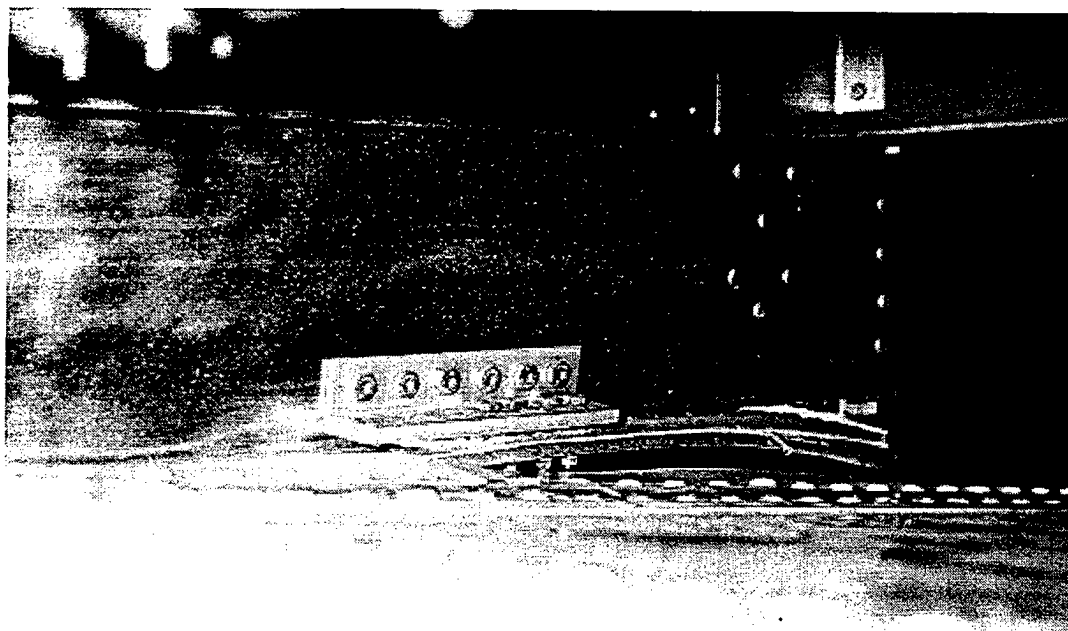


FIGURE 63. POSTTEST AUXILIARY FUEL TANK LEFT FRONT ATTACHMENT
FRAMEWORK SIDE VIEW 2

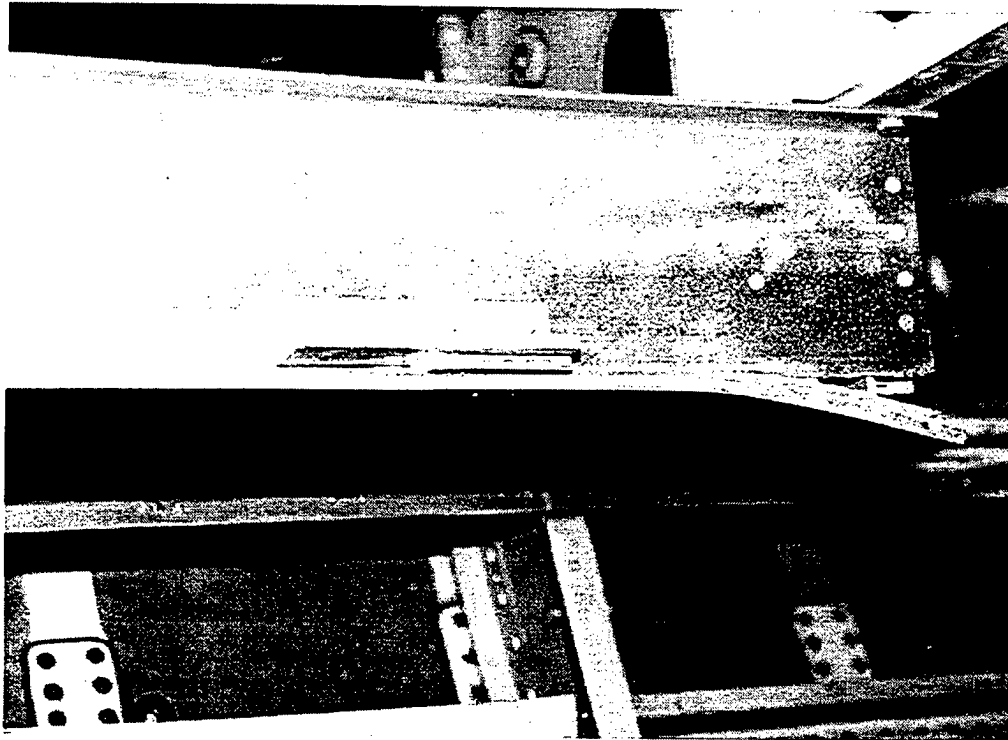


FIGURE 64. POSTTEST AUXILIARY FUEL TANK LEFT FRONT ATTACHMENT
FRAMEWORK SIDE VIEW 3

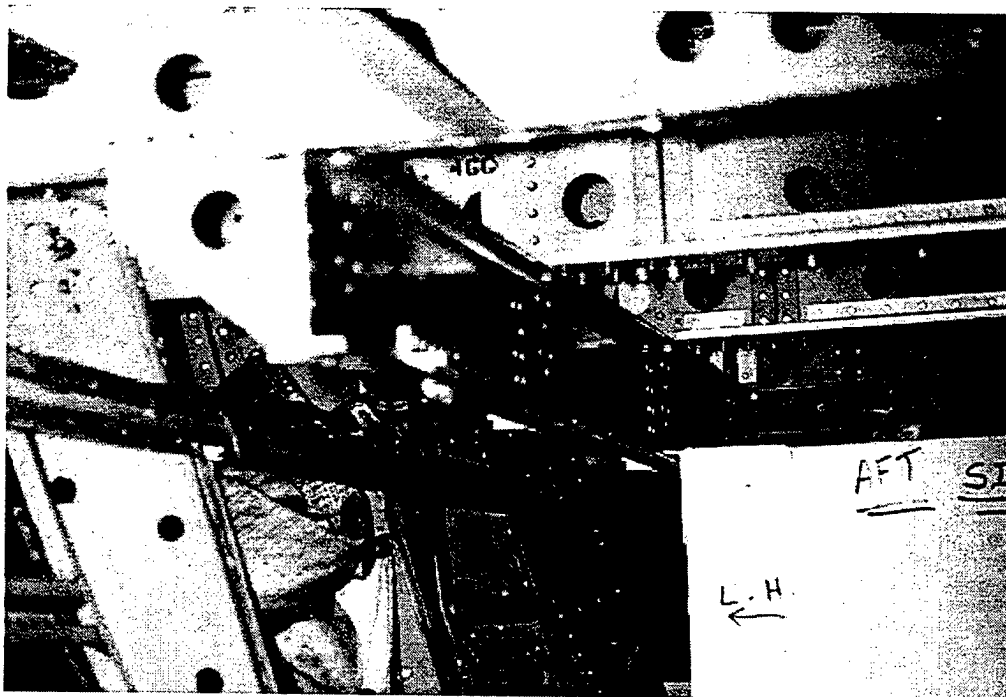


FIGURE 65. POSTTEST AUXILIARY FUEL TANK LEFT ATTACHMENT
FRAMEWORK REAR VIEW 1

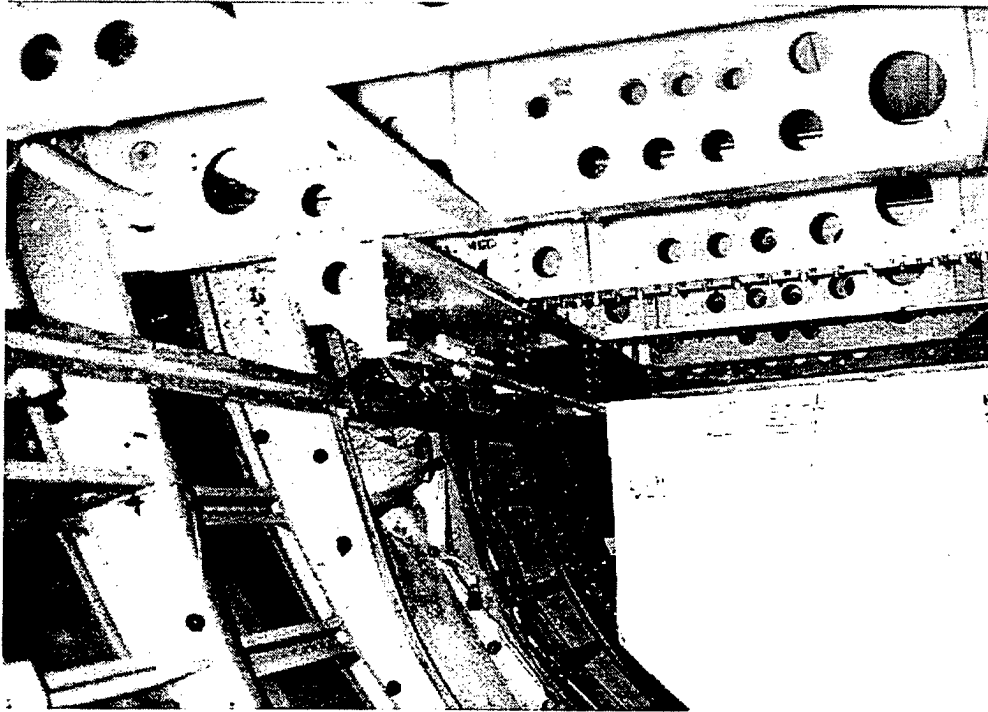


FIGURE 66. POSTTEST AUXILIARY FUEL TANK LEFT ATTACHMENT FRAMEWORK
REAR VIEW 2

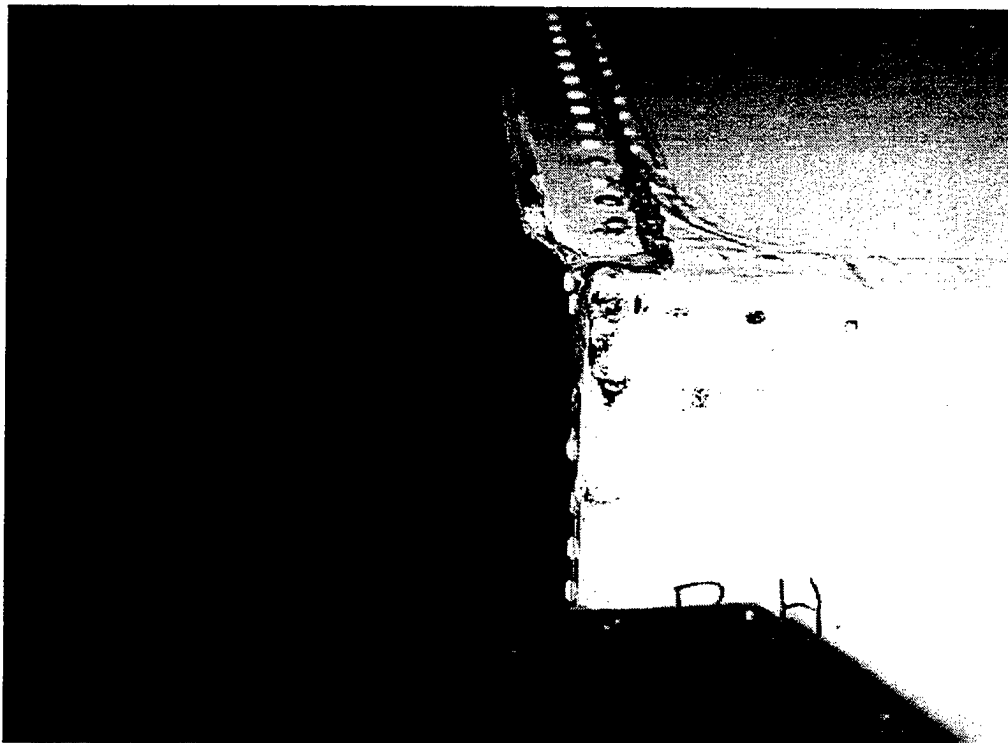


FIGURE 67. POSTTEST AUXILIARY FUEL TANK FRONT UPPER RIGHT CORNER
CLOSE VIEW 1

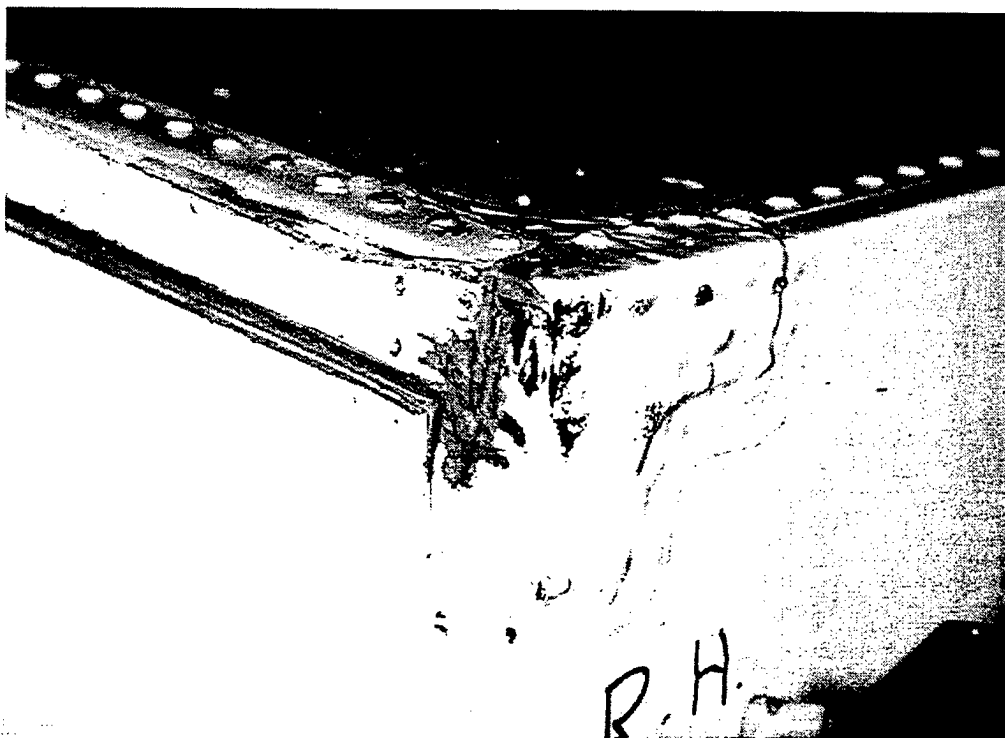


FIGURE 68. POSTTEST AUXILIARY FUEL TANK FRONT UPPER RIGHT CORNER CLOSE VIEW 2

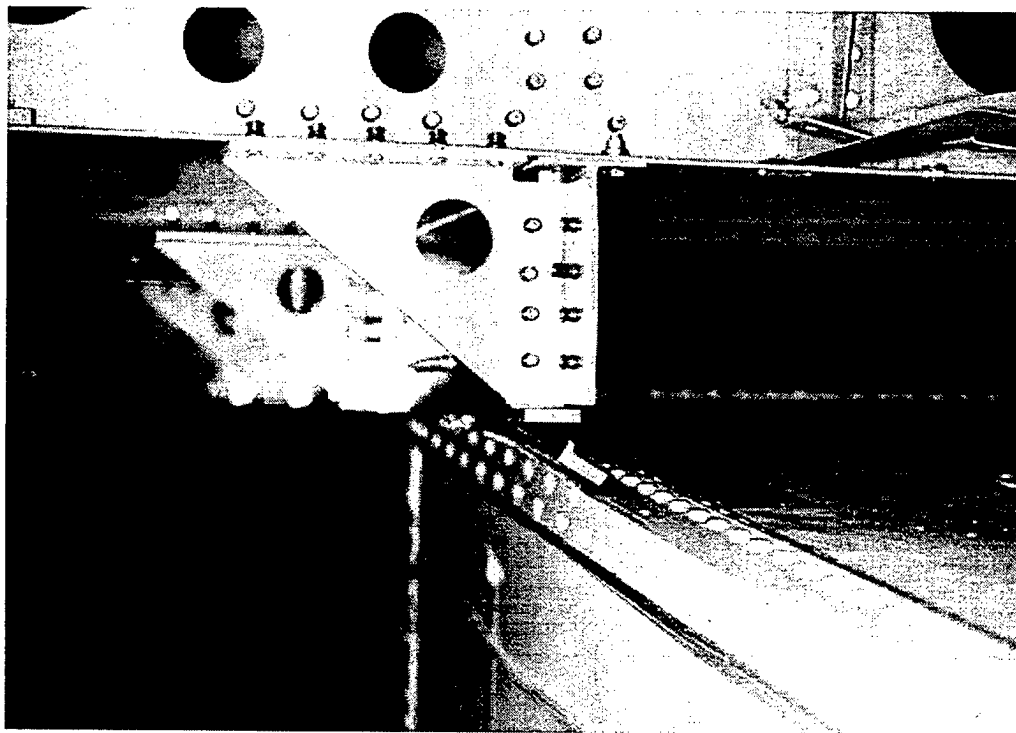


FIGURE 69. POSTTEST AUXILIARY FUEL TANK RIGHT ATTACHMENT FRAMEWORK FRONT VIEW 1

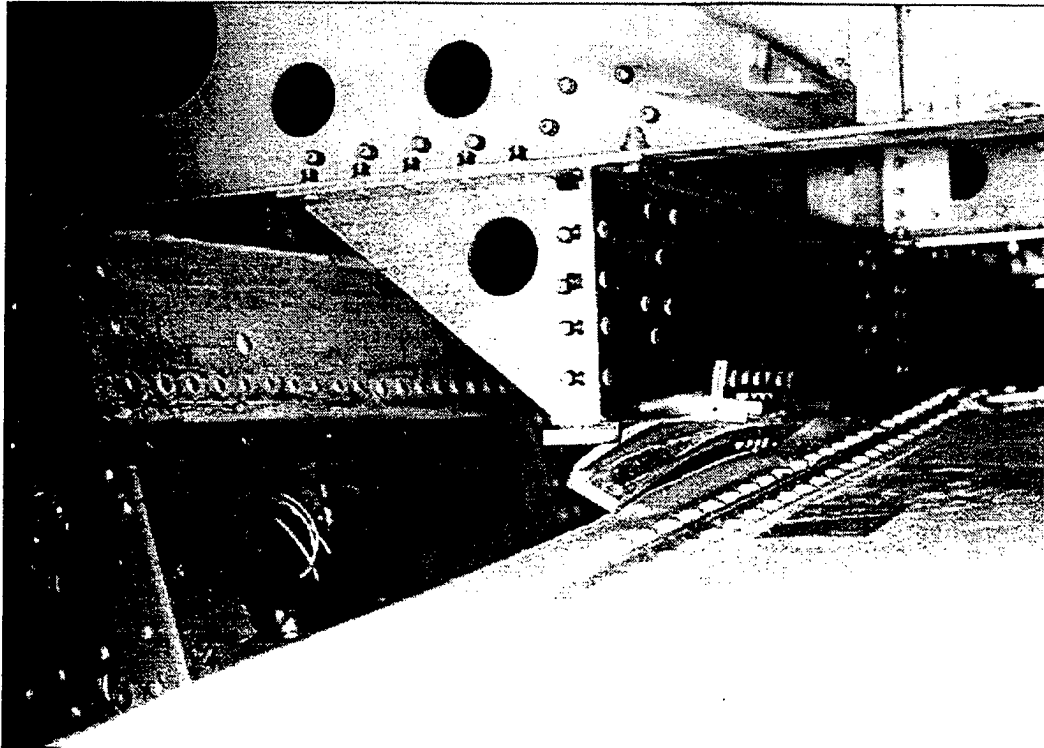


FIGURE 70. POSTTEST AUXILIARY FUEL TANK RIGHT ATTACHMENT
FRAMEWORK FRONT VIEW 2

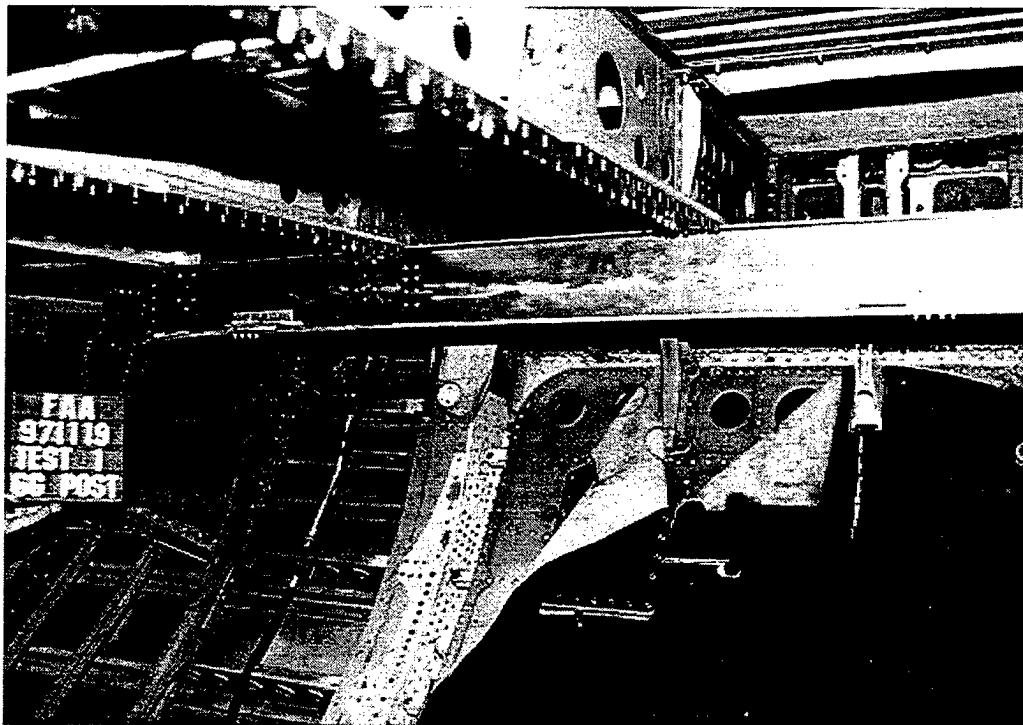


FIGURE 71. POSTTEST AUXILIARY FUEL TANK RIGHT ATTACHMENT
FRAMEWORK OVERALL SIDE VIEW

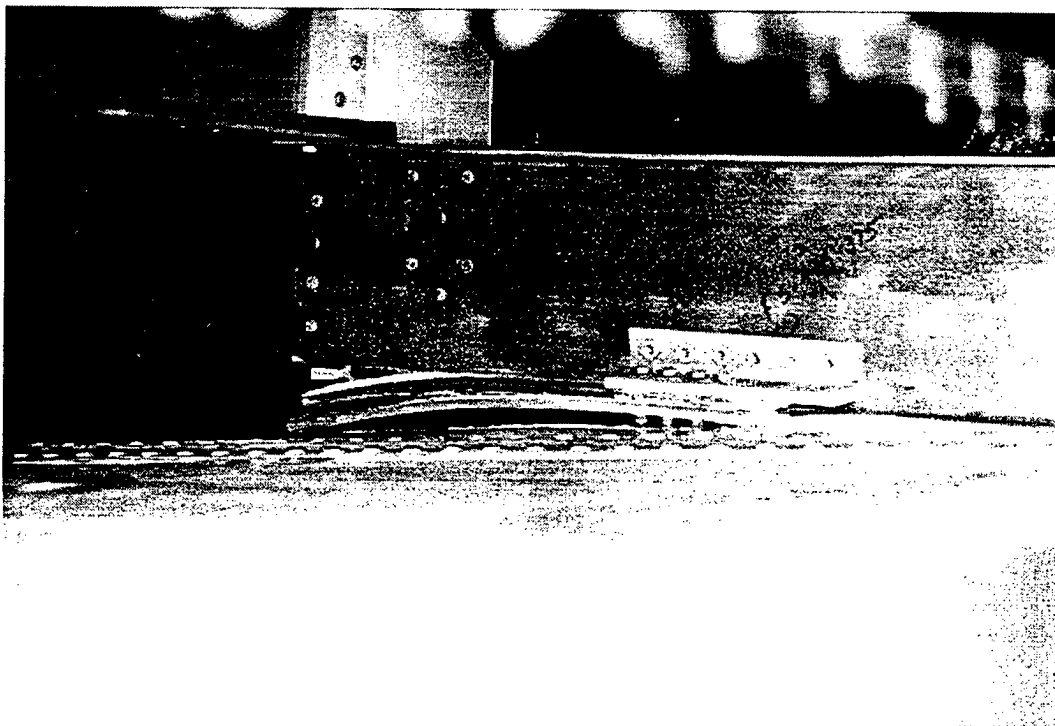


FIGURE 72. POSTTEST AUXILIARY FUEL TANK RIGHT FRONT ATTACHMENT
FRAMEWORK SIDE VIEW 1

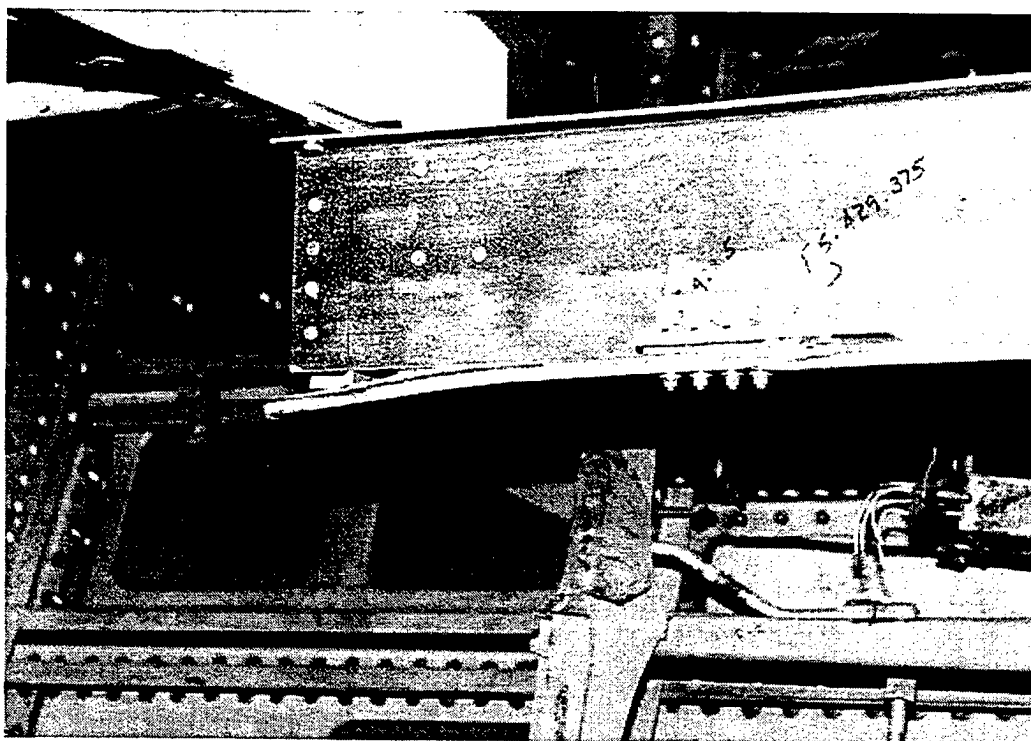


FIGURE 73. POSTTEST AUXILIARY FUEL TANK RIGHT FRONT ATTACHMENT
FRAMEWORK SIDE VIEW 2

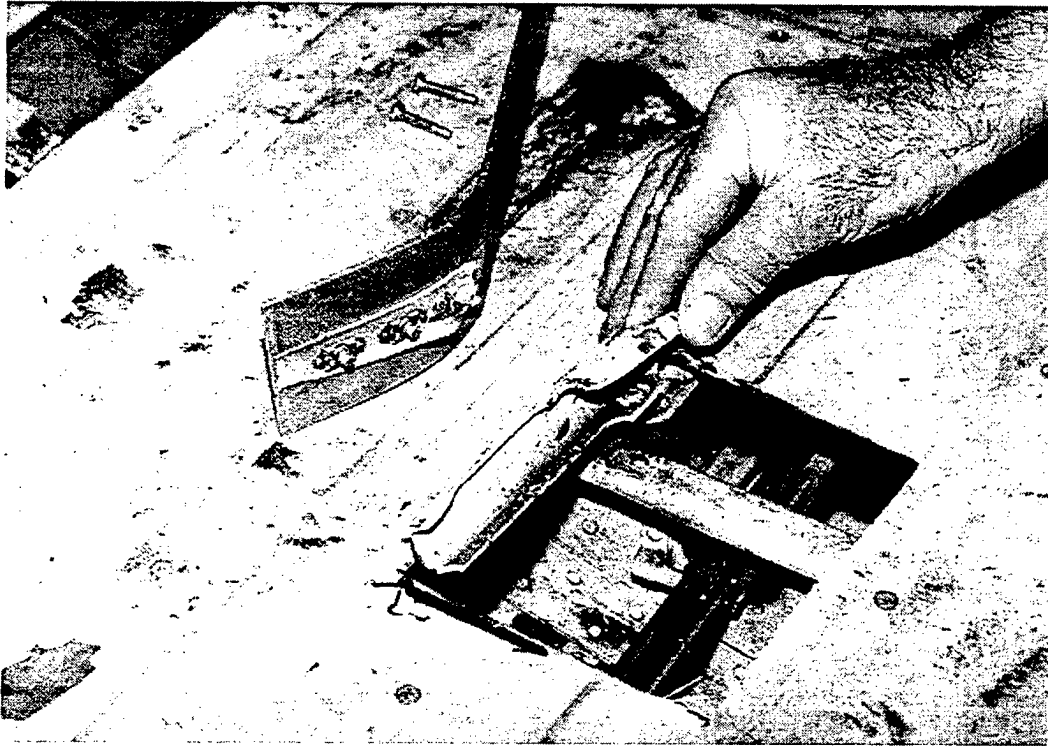


FIGURE 74. POSTTEST AUXILIARY FUEL TANK LOWER LEFT BRACKET
DETACHMENT VIEW 1

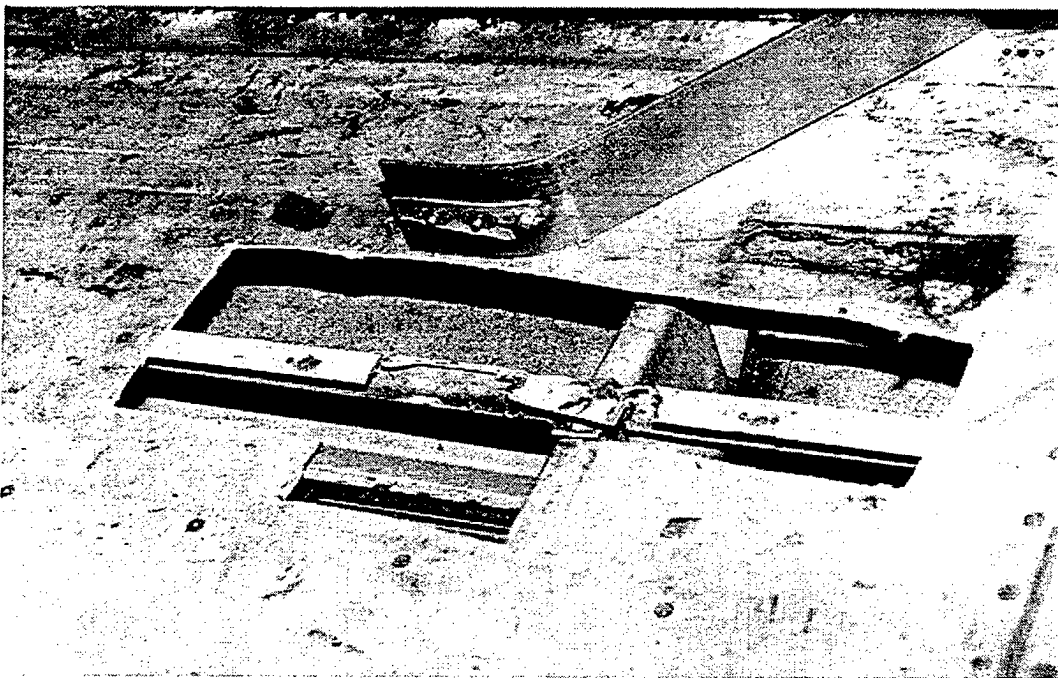


FIGURE 75. POSTTEST AUXILIARY FUEL TANK LOWER LEFT BRACKET
DETACHMENT VIEW 2

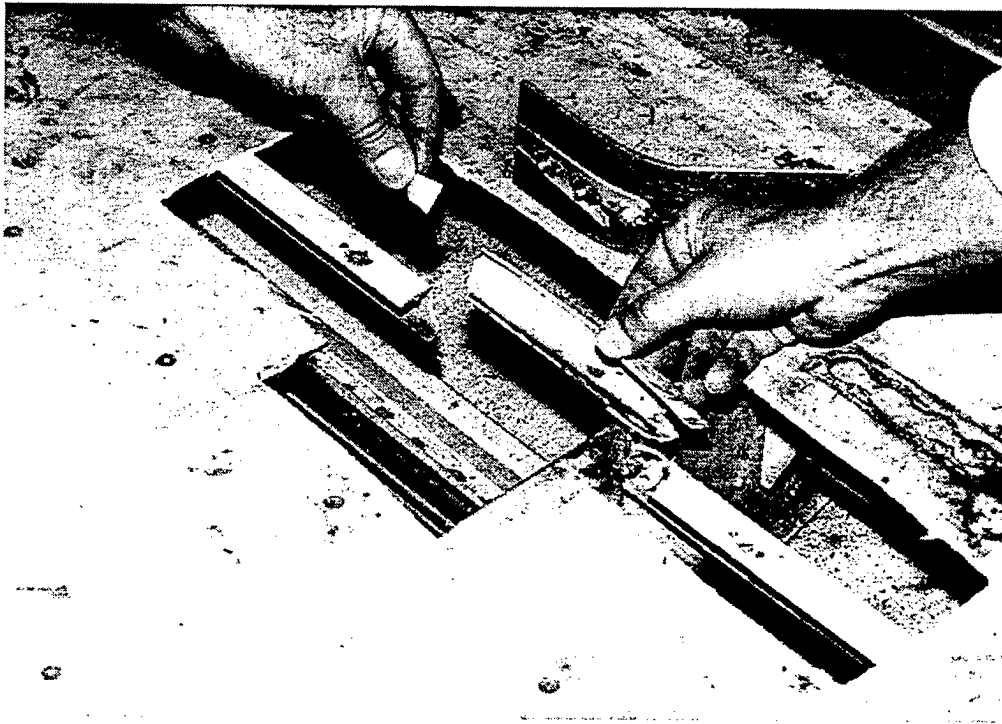


FIGURE 76. POSTTEST AUXILIARY FUEL TANK LOWER LEFT BRACKET
DETACHMENT VIEW 3

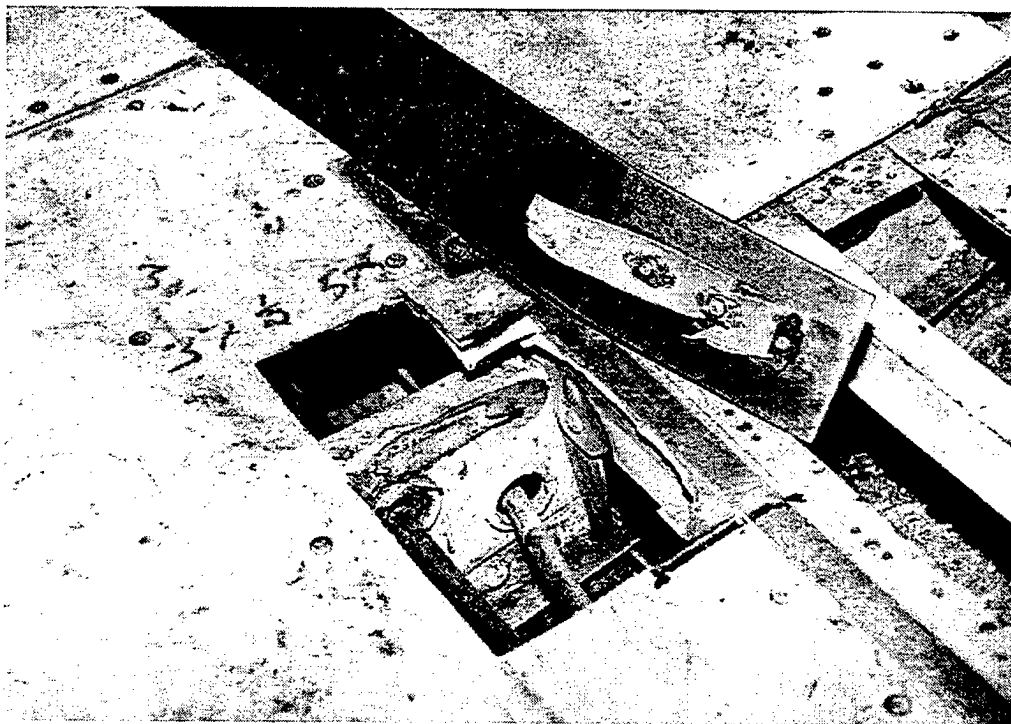


FIGURE 77. POSTTEST AUXILIARY FUEL TANK LOWER RIGHT BRACKET
DETACHMENT VIEW 1

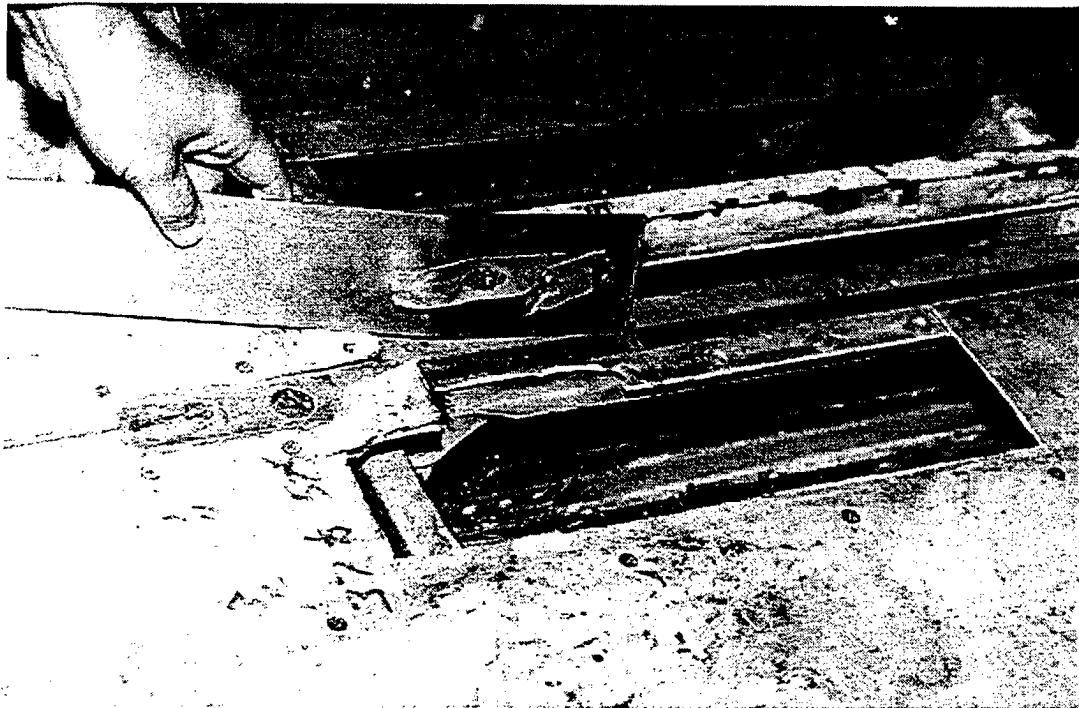


FIGURE 78. POSTTEST AUXILIARY FUEL TANK LOWER RIGHT BRACKET
DETACHMENT VIEW 2

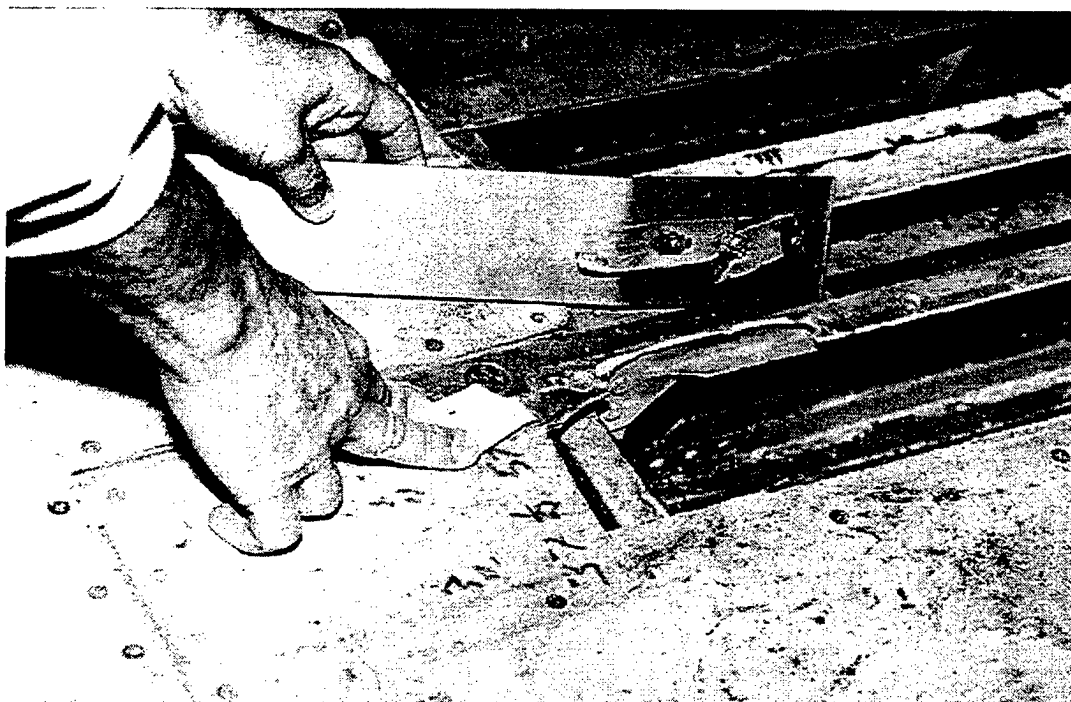


FIGURE 79. POSTTEST AUXILIARY FUEL TANK LOWER RIGHT BRACKET
DETACHMENT VIEW 3



FIGURE 80. POSTTEST AUXILIARY FUEL TANK LOWER RIGHT BRACKET
DETACHMENT VIEW 4

TEST 2. (FIGURES 81 THROUGH 82)



FIGURE 81. PRETEST BIN A OVERALL SIDE VIEW



FIGURE 82. PRETEST BIN B OVERALL SIDE VIEW

TESTS 3. (FIGURES 83 THROUGH 131)

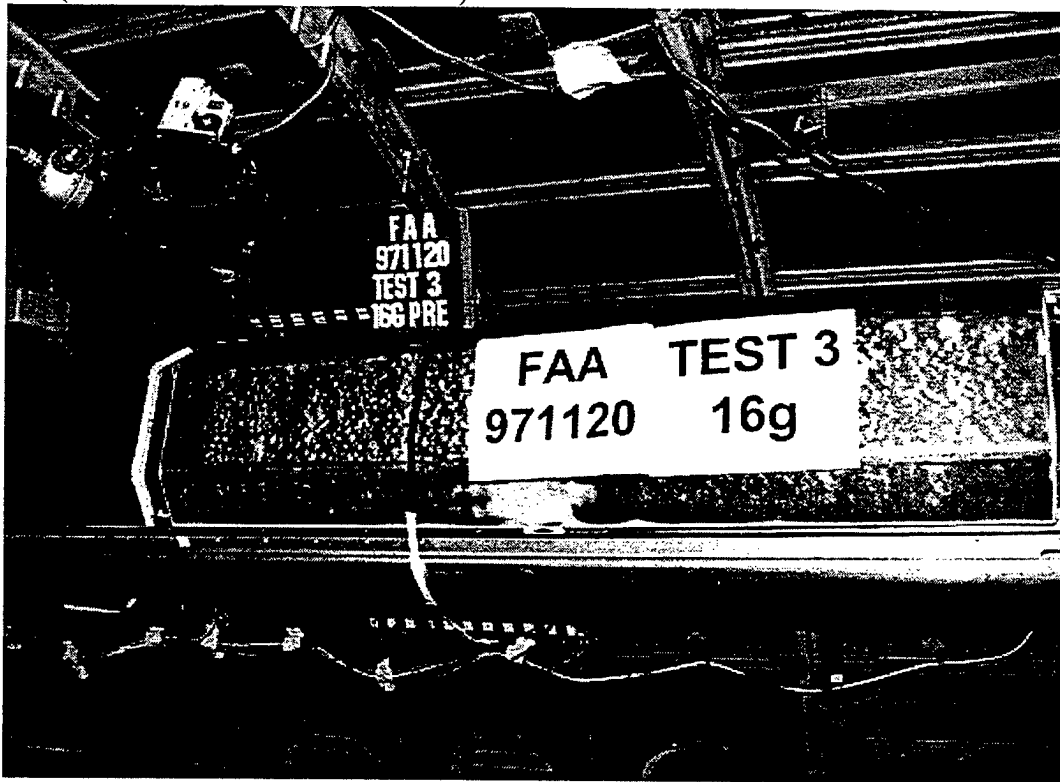


FIGURE 83. PRETEST BIN A OVERALL SIDE VIEW



FIGURE 84. PRETEST BIN B OVERALL SIDE VIEW

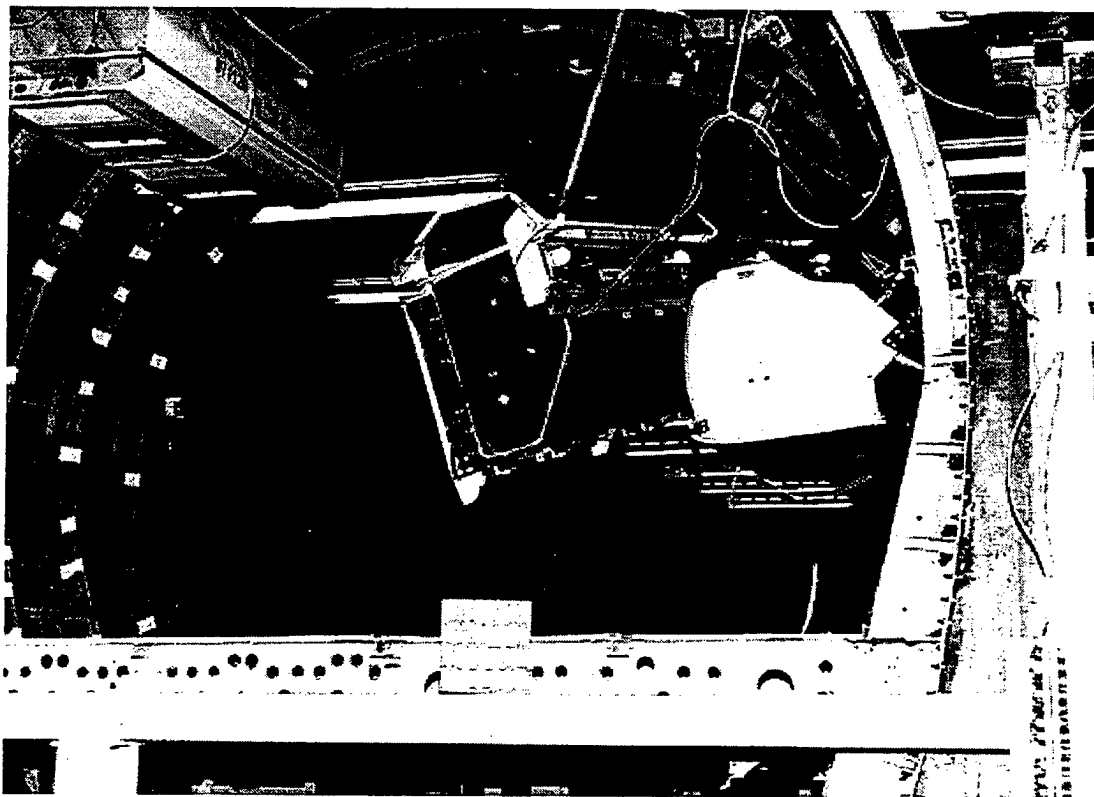


FIGURE 85. POSTTEST BIN A FRONT VIEW

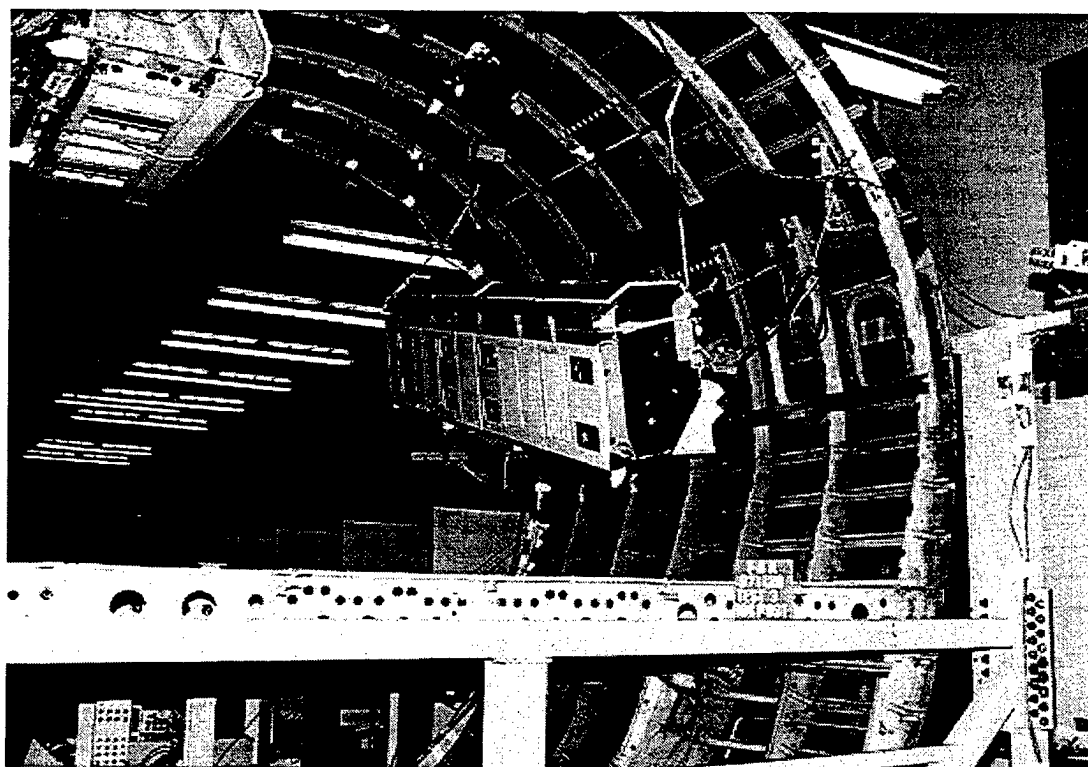


FIGURE 86. POSTTEST BIN A FRONT RIGHT ANGLE VIEW

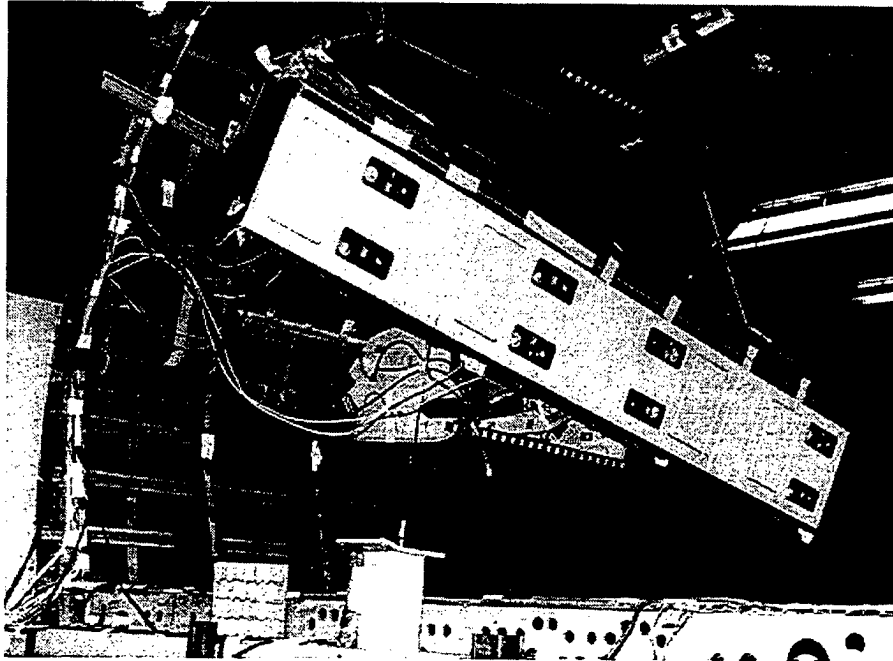


FIGURE 87. POSTTEST BIN A REAR RIGHT ANGLE VIEW

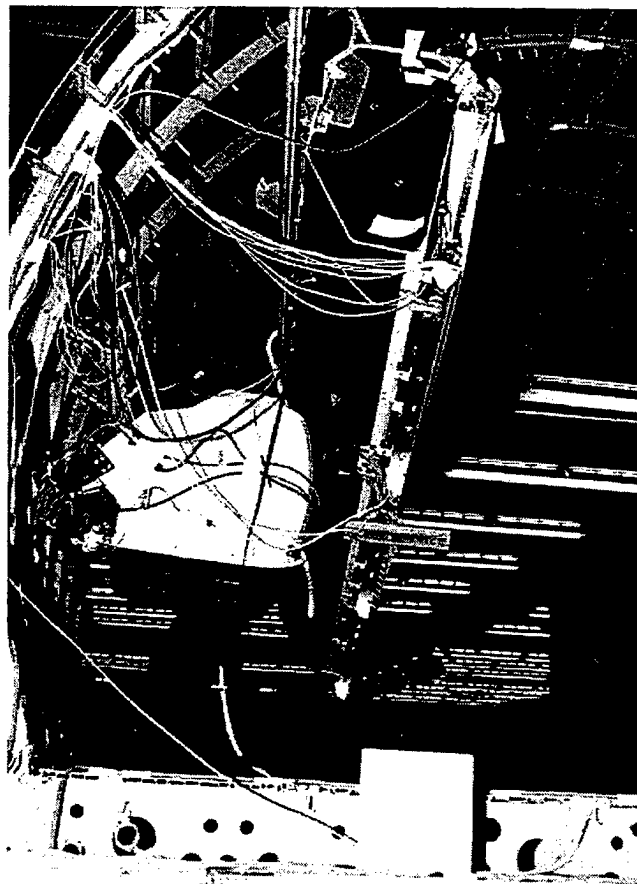


FIGURE 88. POSTTEST BIN A REAR VIEW

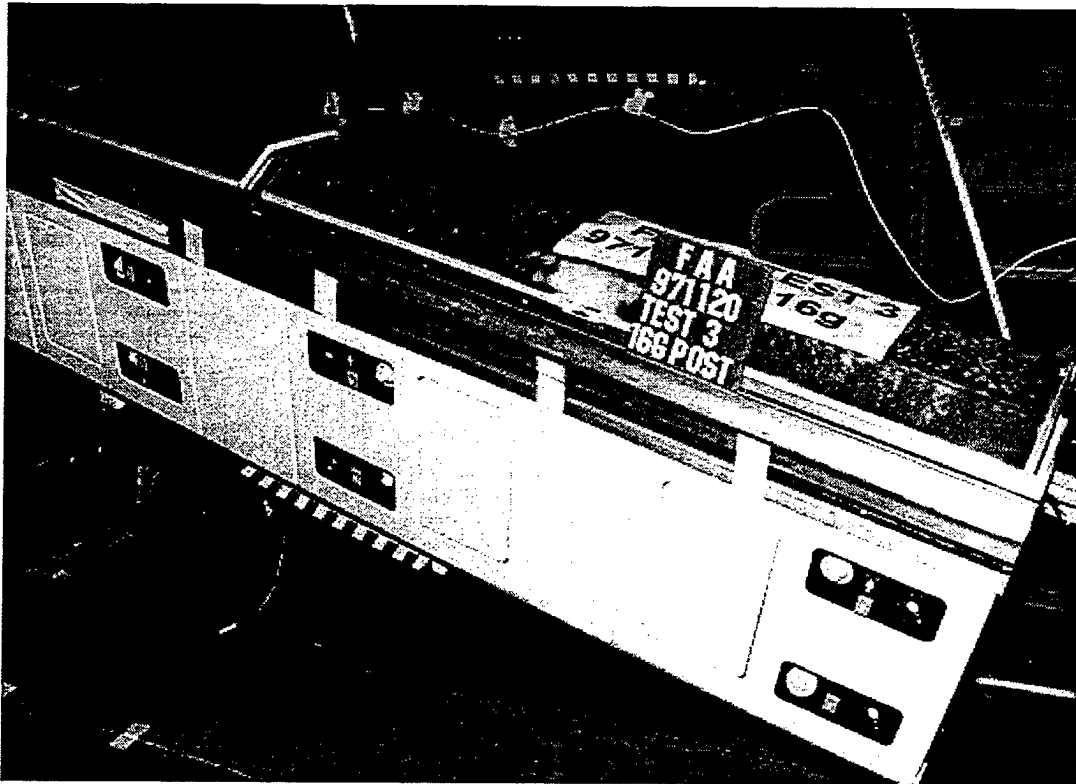


FIGURE 89. POSTTEST BIN A FRONT SECTION SIDE VIEW

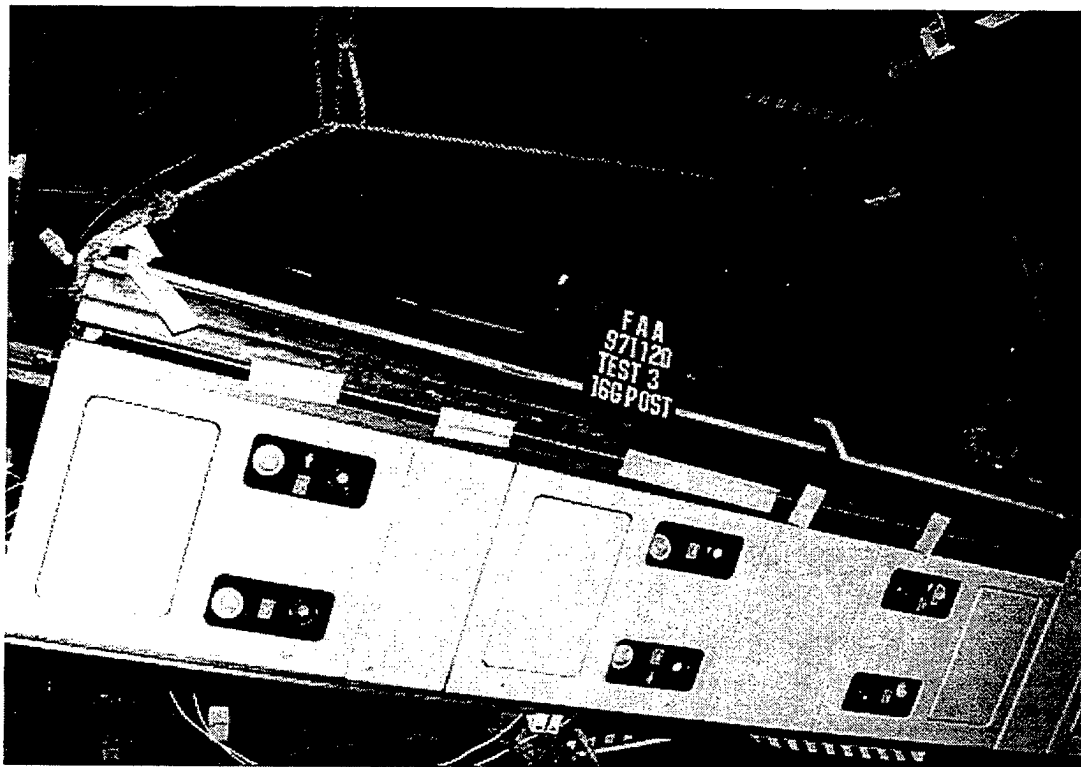


FIGURE 90. POSTTEST BIN A REAR SECTION SIDE VIEW

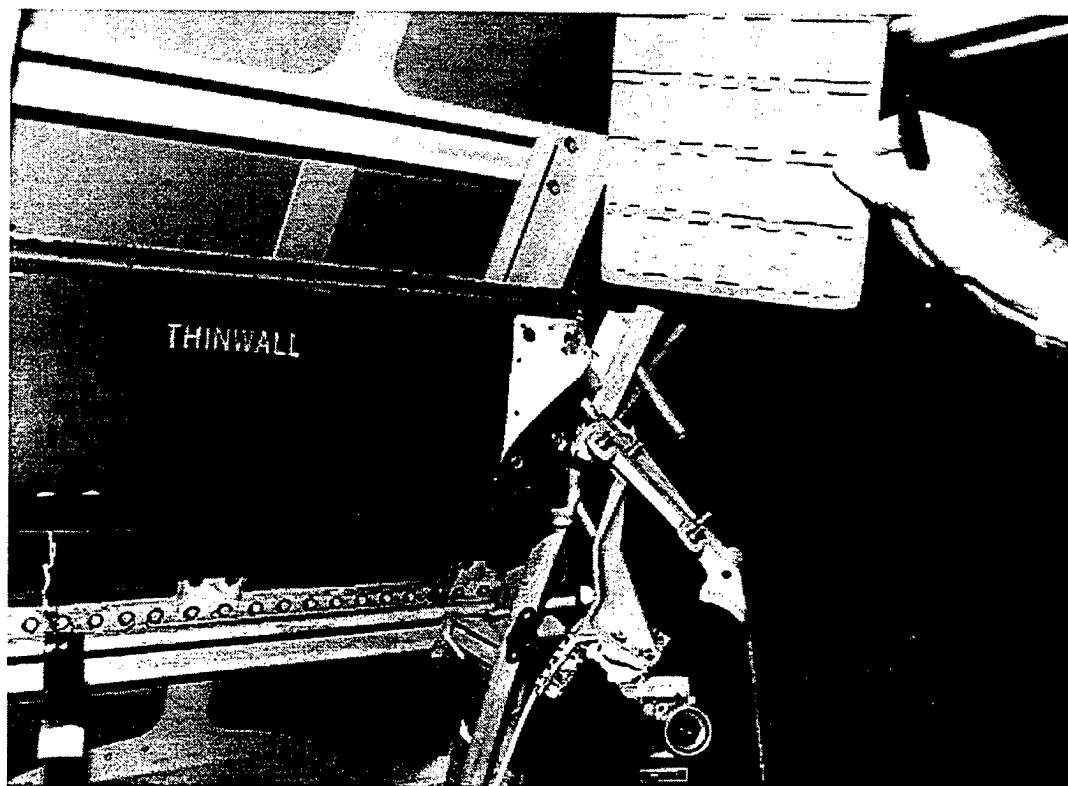


FIGURE 91. POSTTEST BIN A FRONT LOWER SUPPORT VIEW 1

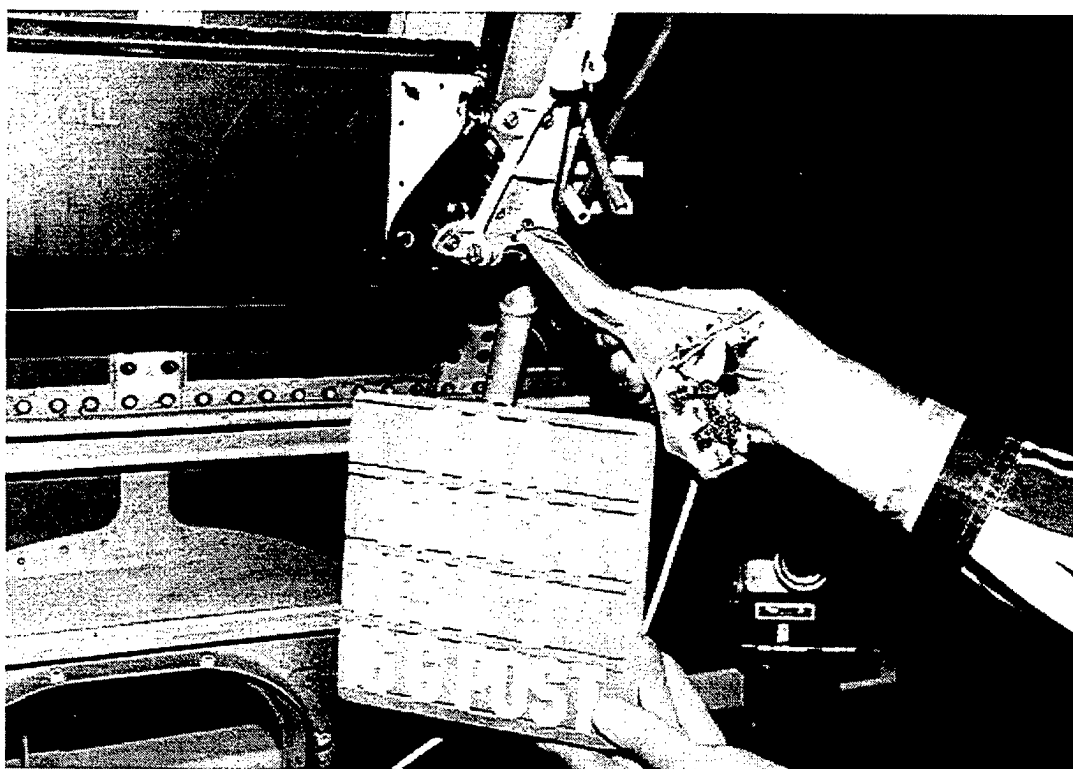


FIGURE 92. POSTTEST BIN A FRONT LOWER SUPPORT VIEW 2

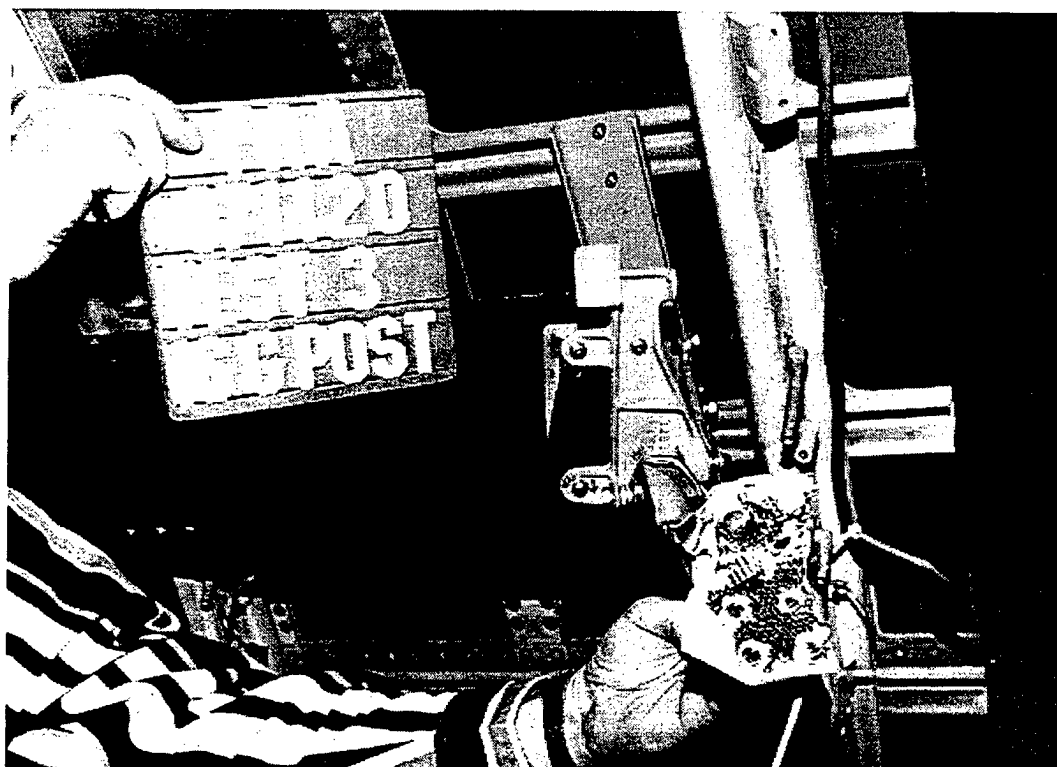


FIGURE 93. POSTTEST BIN A FRONT LOWER SUPPORT VIEW 3



FIGURE 94. POSTTEST BIN A FRONT LOWER BIN VIEW

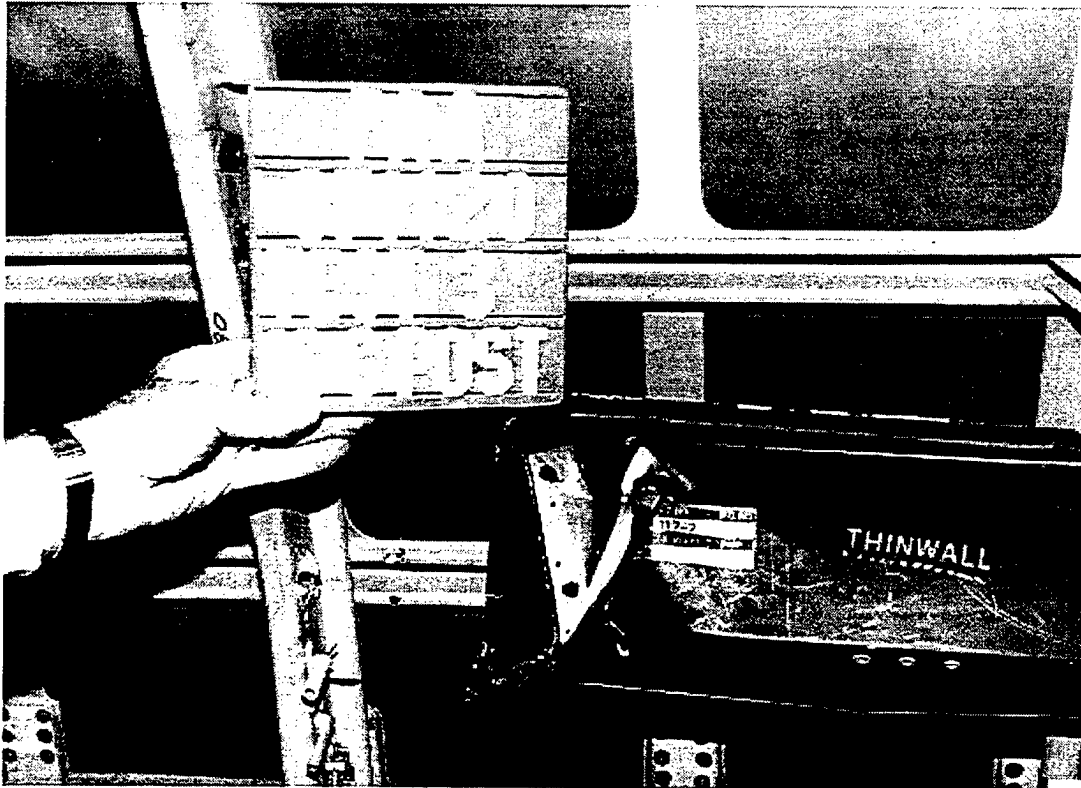


FIGURE 95. POSTTEST BIN A AIR DUCT AT FS480 VIEW 1

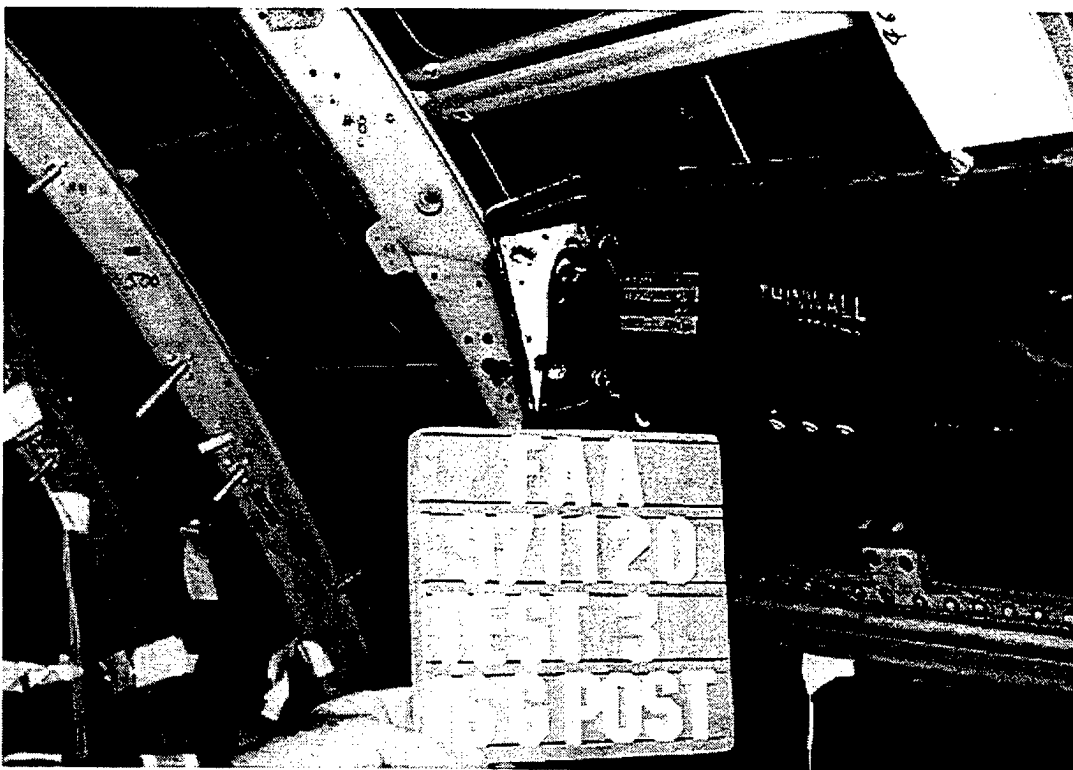


FIGURE 96. POSTTEST BIN A AIR DUCT AT FS480 VIEW 2



FIGURE 97. POSTTEST FS480 BIN A SUPPORT ATTACHMENT LOCATION VIEW 1



FIGURE 98. POSTTEST FS480 BIN A SUPPORT ATTACHMENT LOCATION VIEW 2



FIGURE 99. POSTTEST FS480 BIN A SUPPORT ATTACHMENT LOCATION VIEW 3



FIGURE 100. POSTTEST FS480 BIN A SUPPORT ATTACHMENT LOCATION VIEW 4

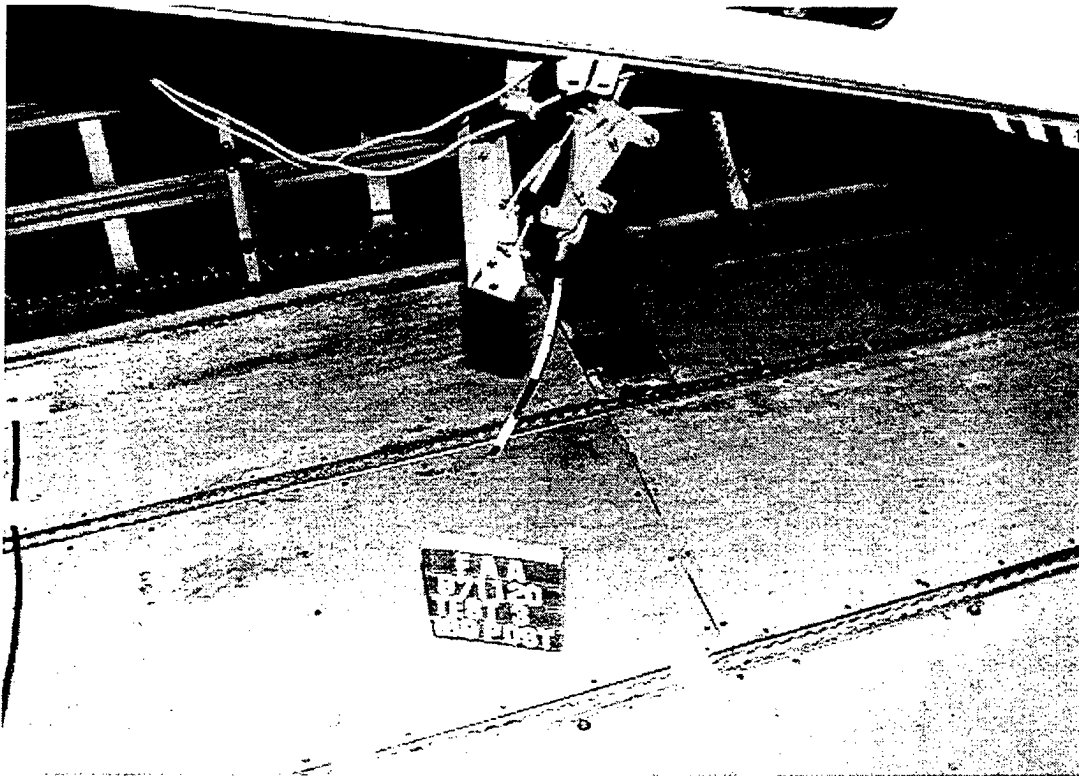


FIGURE 101. POSTTEST BIN A MID AND AFT LOWER SUPPORTS VIEW 1

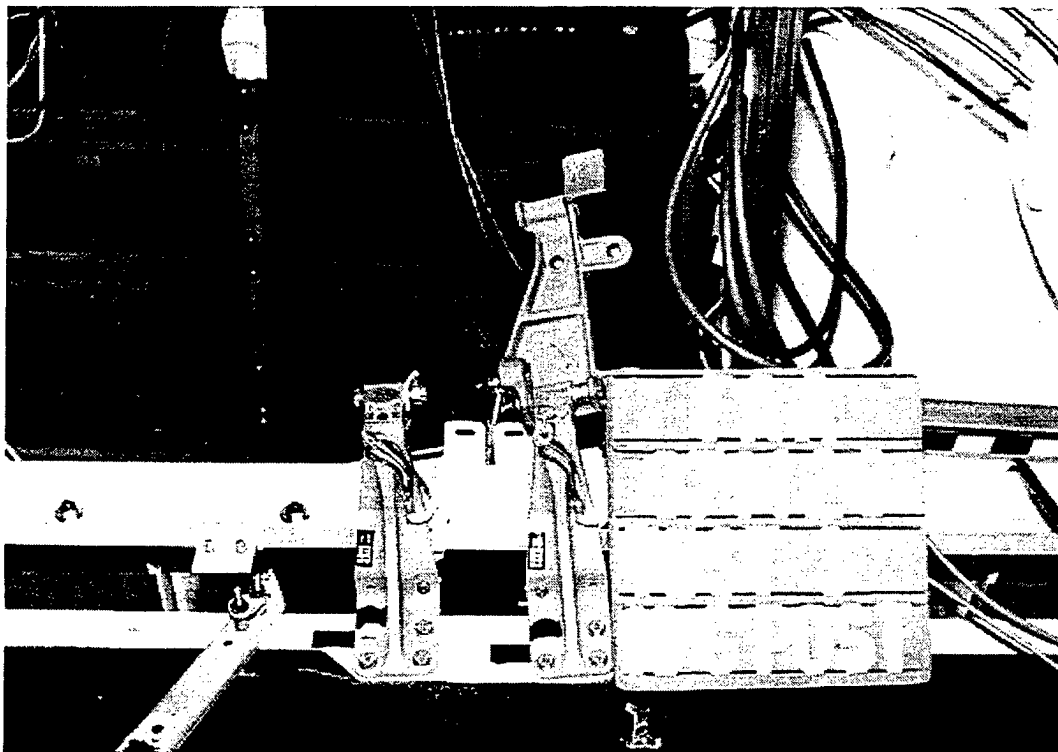


FIGURE 102. POSTTEST BIN A MID AND AFT LOWER SUPPORTS VIEW 2

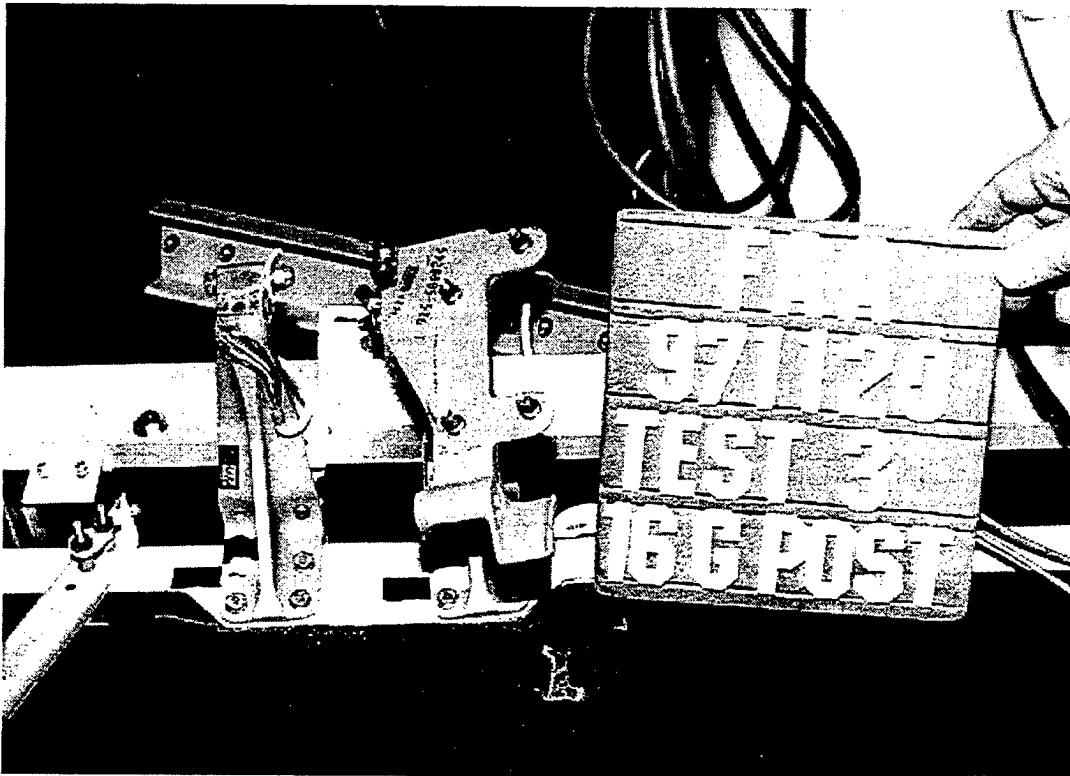


FIGURE 103. POSTTEST BIN A MID AND AFT LOWER SUPPORTS VIEW 3



FIGURE 104. POSTTEST BIN A MID AND AFT LOWER SUPPORTS VIEW 4

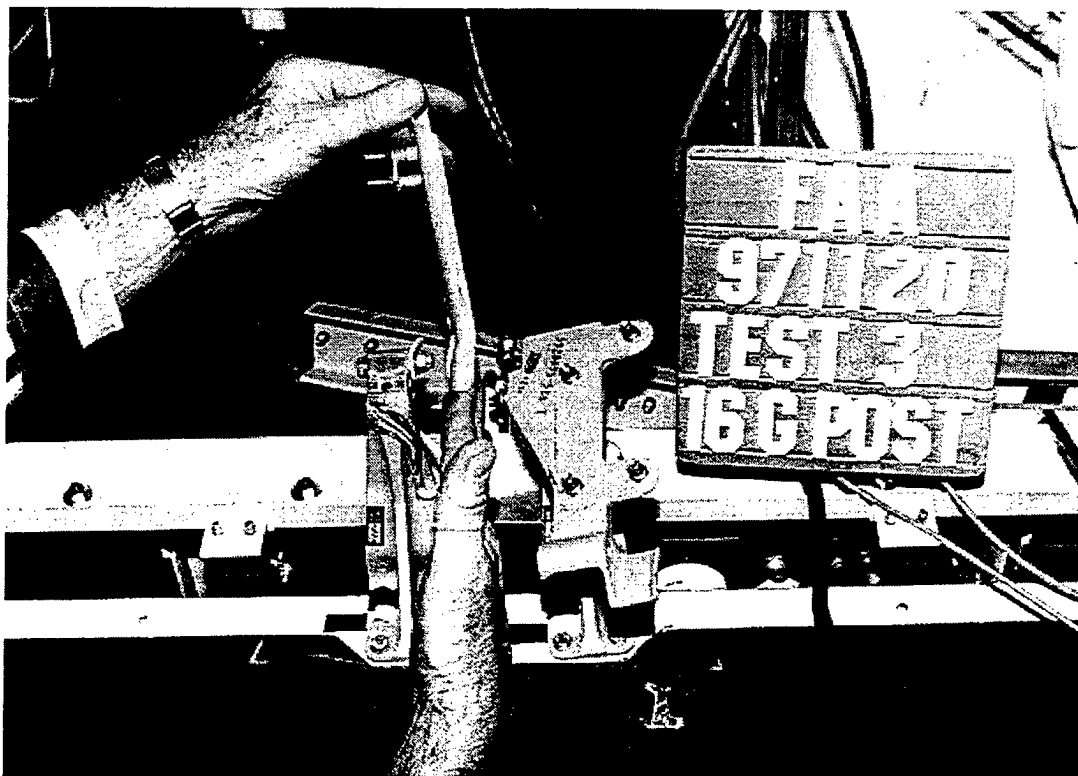


FIGURE 105. POSTTEST BIN A MID AND AFT LOWER SUPPORTS VIEW 5



FIGURE 106. POSTTEST BIN A UPPER RAIL (FS400) DETACHMENT VIEW AT BIN

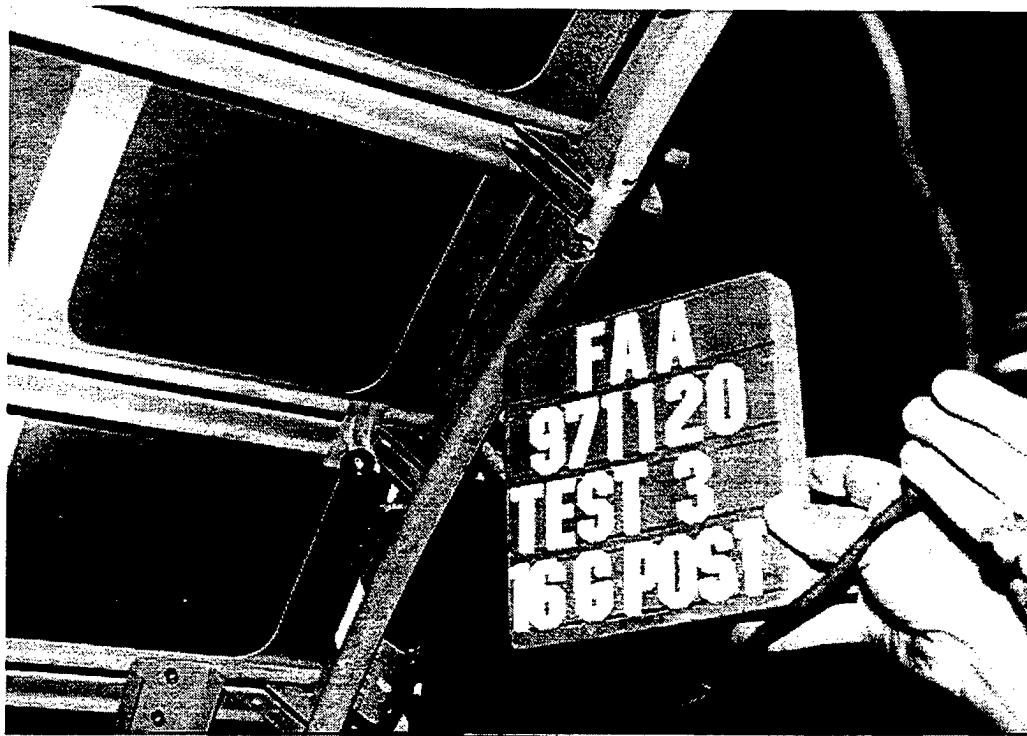


FIGURE 107. POSTTEST BIN A UPPER RAIL (FS400) DETACHMENT VIEW
AT FS VIEW 1



FIGURE 108. POSTTEST BIN A UPPER RAIL (FS400) DETACHMENT VIEW
AT FS VIEW 2



FIGURE 109. POSTTEST BIN A UPPER RAIL (FS440) DETACHMENT VIEW
AT BIN VIEW 1

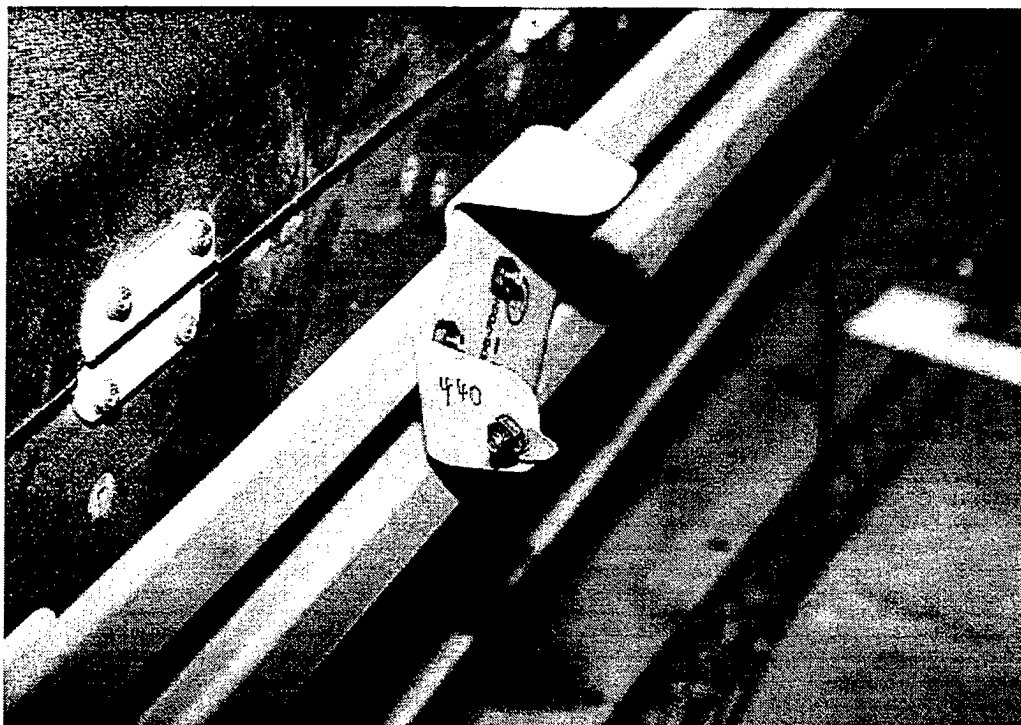


FIGURE 110. POSTTEST BIN A UPPER RAIL (FS440) DETACHMENT VIEW
AT BIN VIEW 2



FIGURE 111. POSTTEST BIN A UPPER RAIL (FS440) DETACHMENT VIEW
AT FS VIEW 1

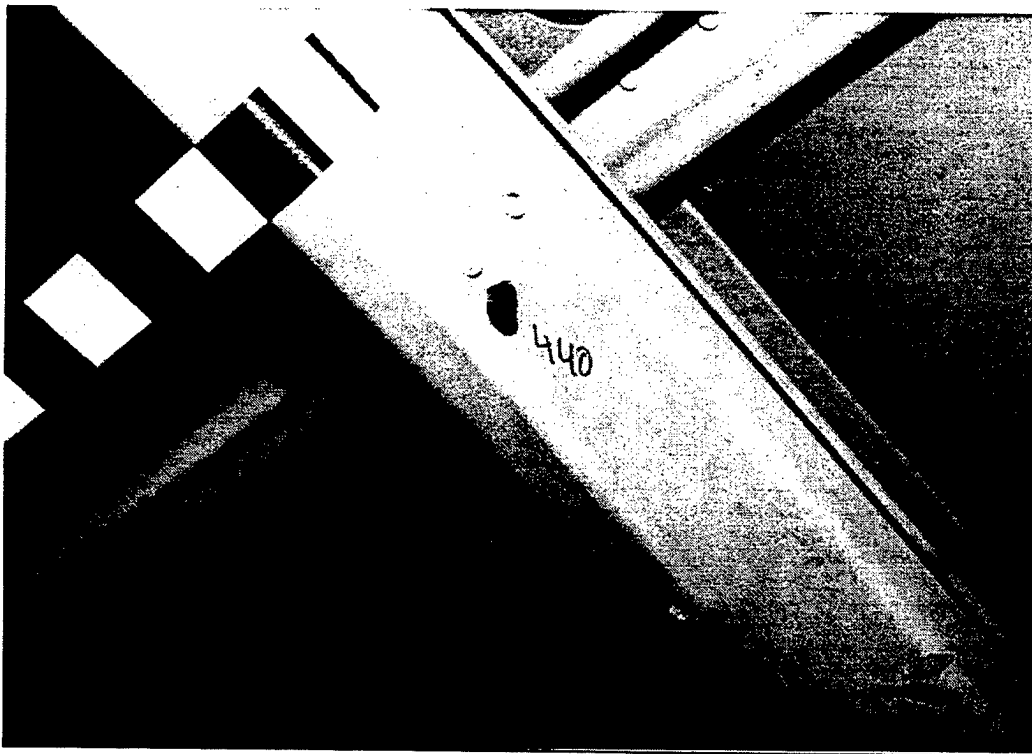


FIGURE 112. POSTTEST BIN A UPPER RAIL (FS440) DETACHMENT VIEW
AT FS VIEW 2

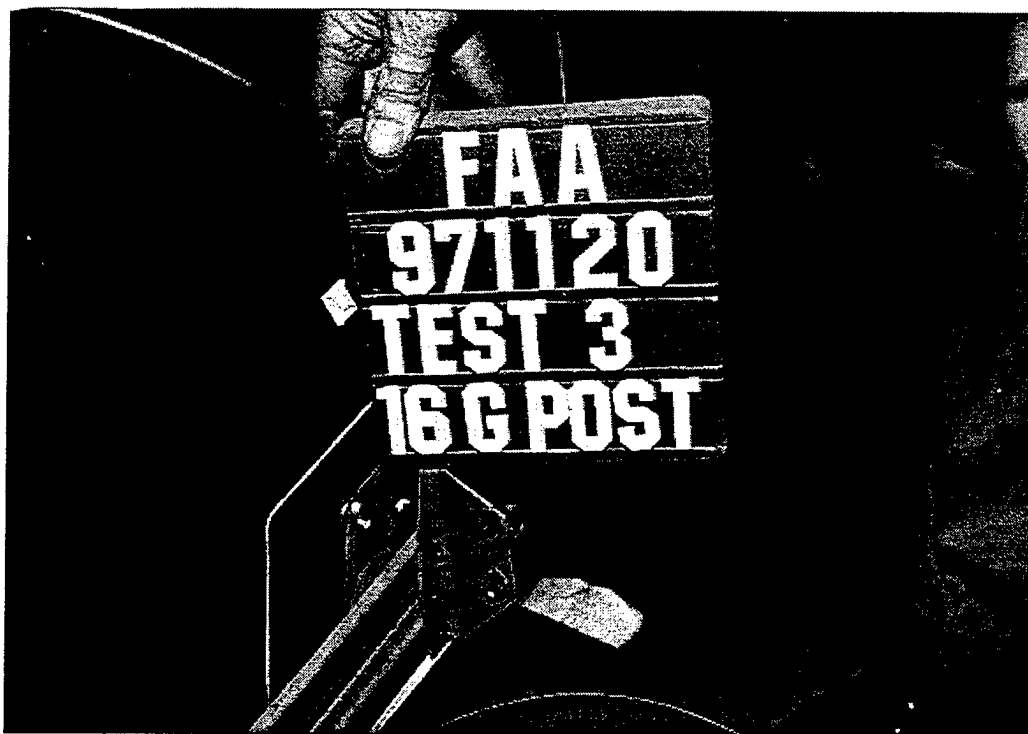


FIGURE 113. POSTTEST BIN A UPPER RAIL (FS460) DETACHMENT VIEW
AT BIN VIEW 1

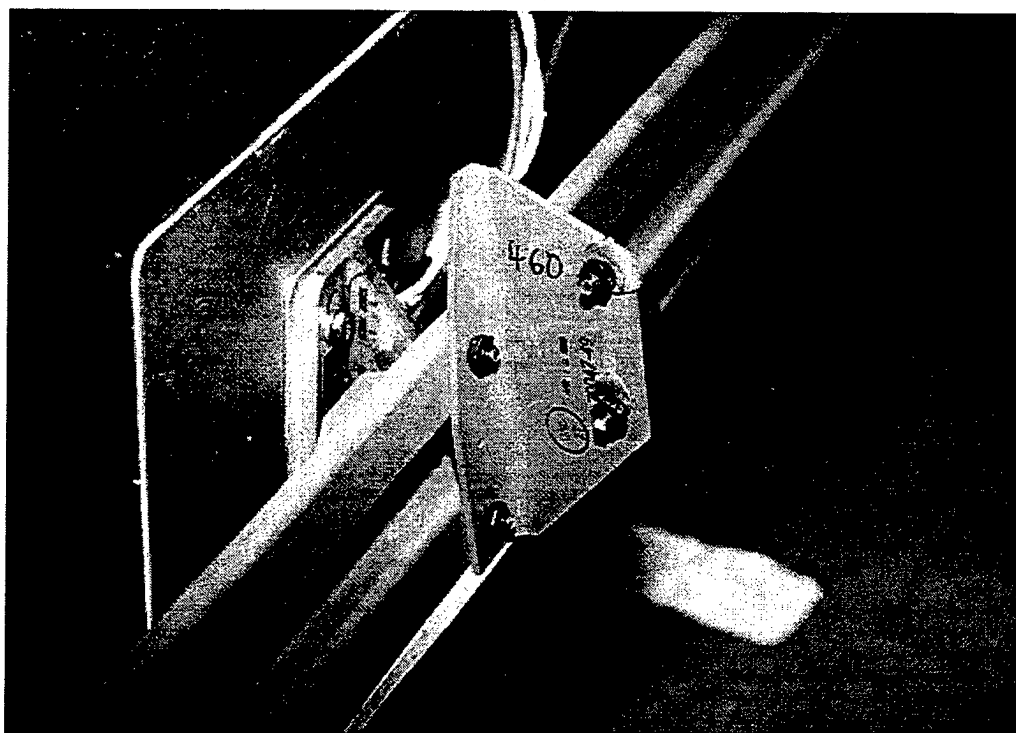


FIGURE 114. POSTTEST BIN A UPPER RAIL (FS460) DETACHMENT VIEW
AT BIN VIEW 2

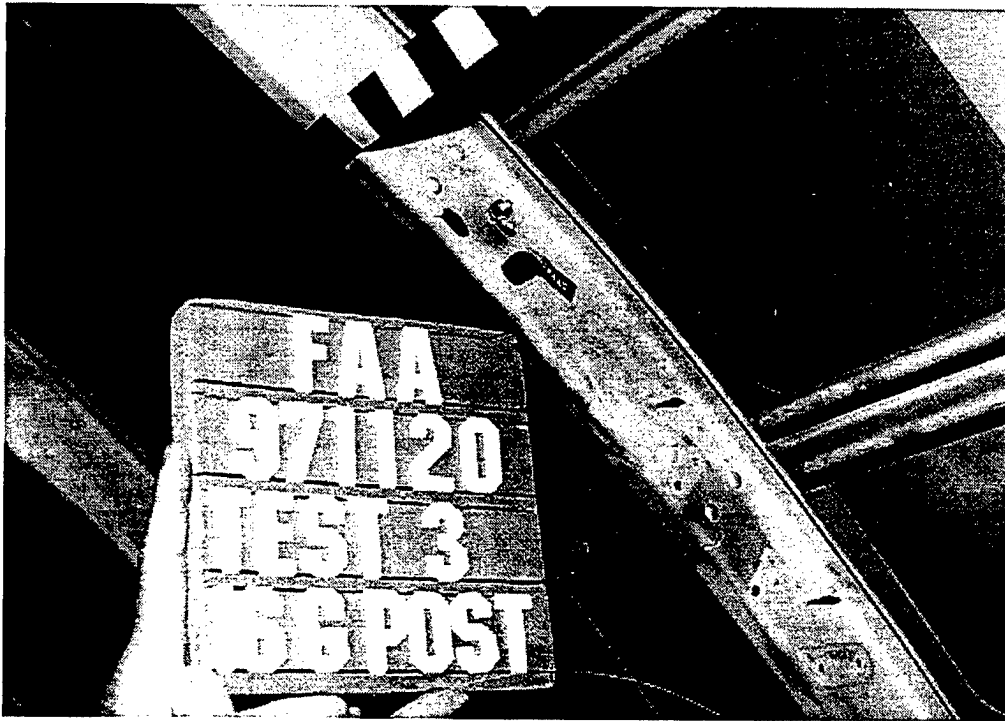


FIGURE 115. POSTTEST BIN A UPPER RAIL (FS460) DETACHMENT VIEW
AT FS VIEW 1

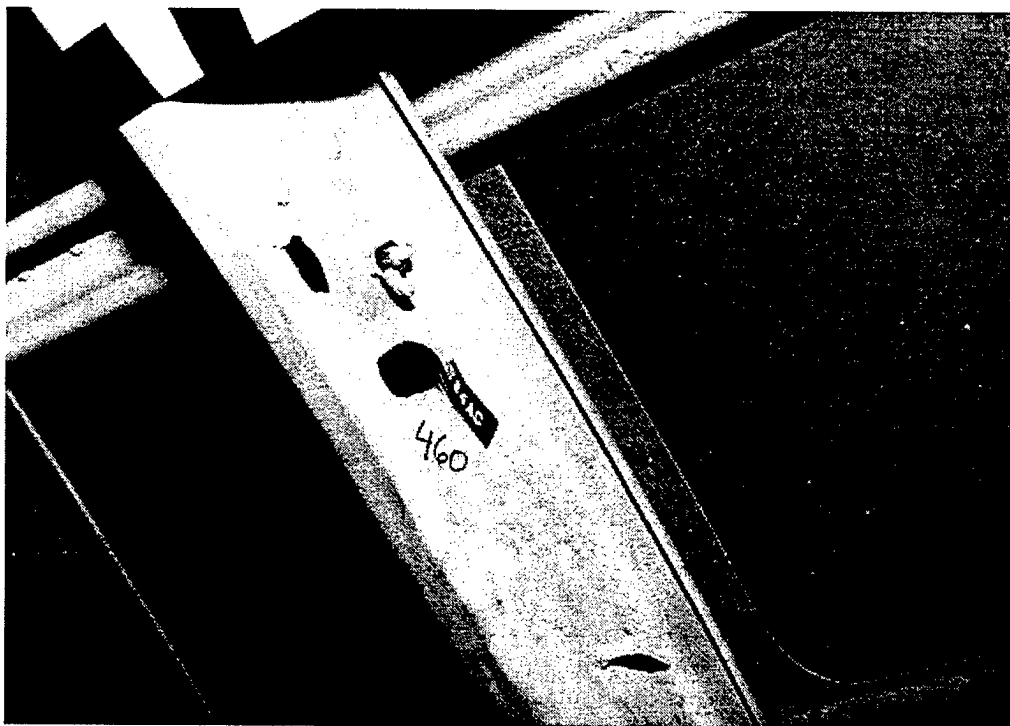


FIGURE 116. POSTTEST BIN A UPPER RAIL (FS460) DETACHMENT VIEW
AT FS VIEW 2

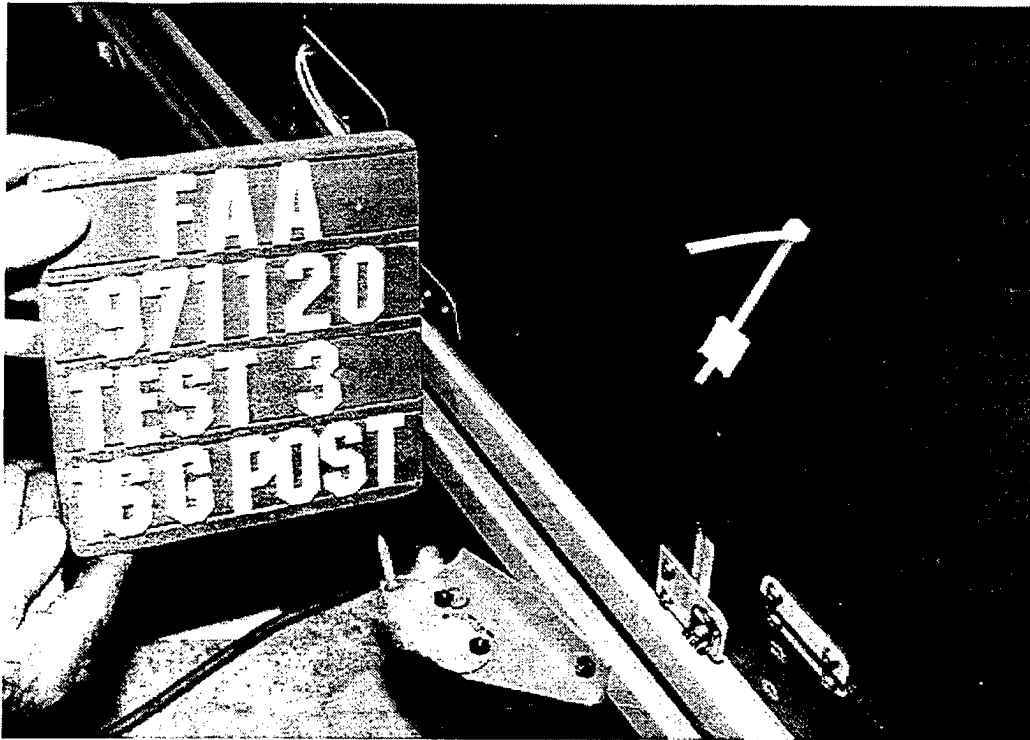


FIGURE 117. POSTTEST BIN A UPPER RAIL (FS500) DETACHMENT VIEW
AT BIN VIEW 1

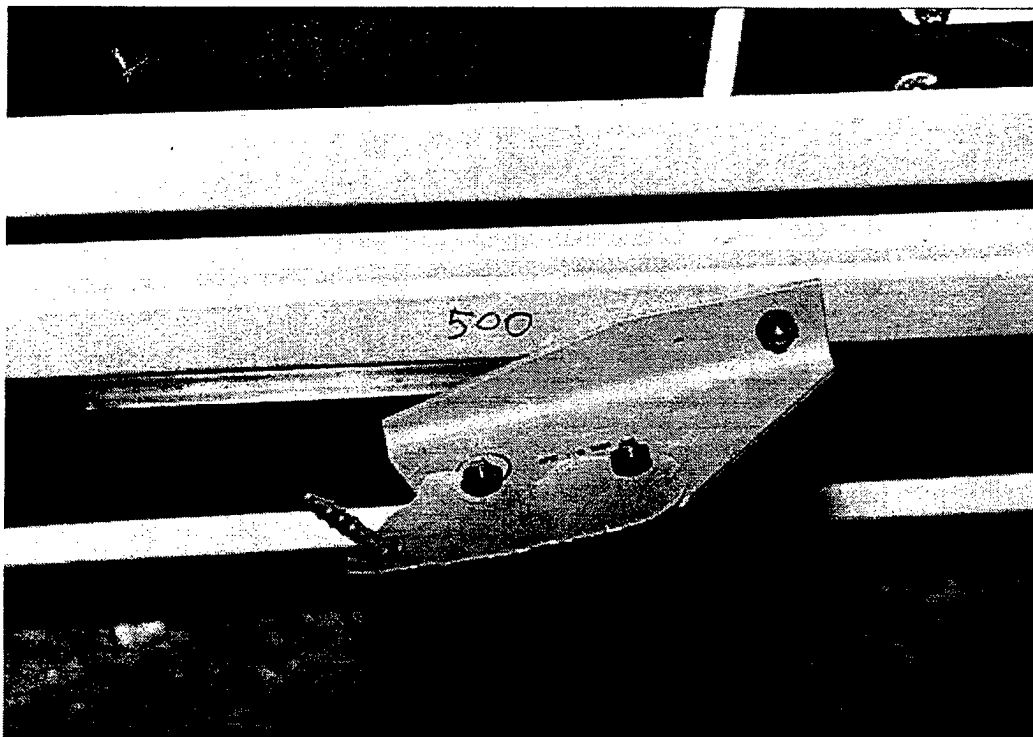


FIGURE 118. POSTTEST BIN A UPPER RAIL (FS500) DETACHMENT VIEW
AT BIN VIEW 2



FIGURE 119. POSTTEST BIN A UPPER RAIL (FS500) DETACHMENT VIEW
AT FS VIEW 1

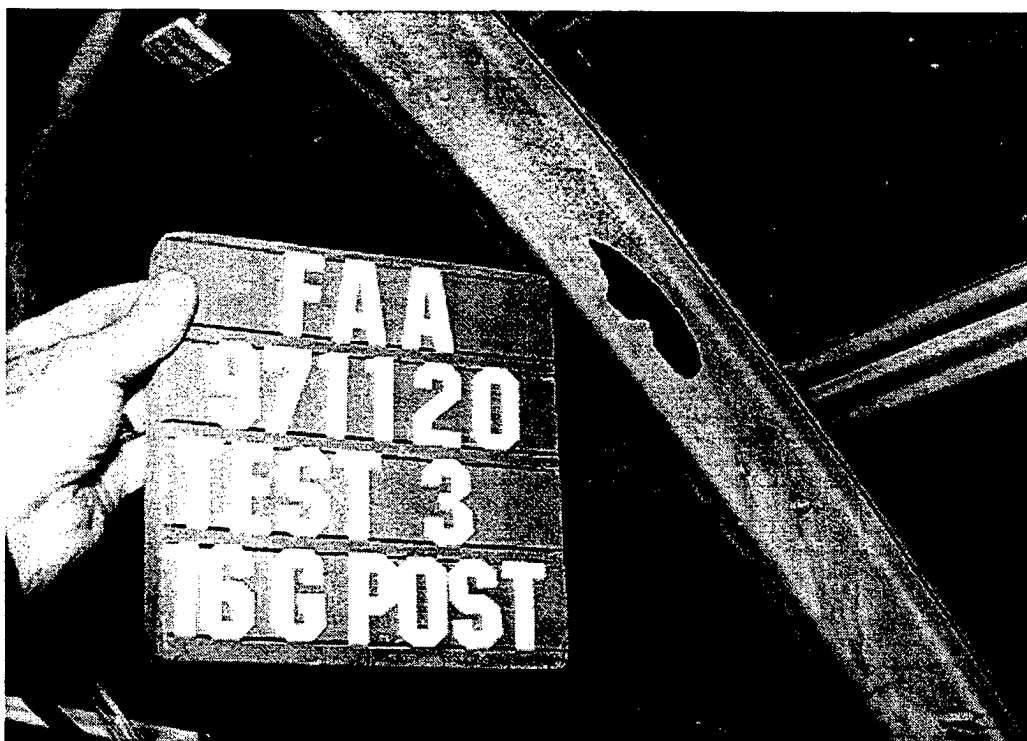


FIGURE 120. POSTTEST BIN A UPPER RAIL (FS500) DETACHMENT VIEW
AT FS VIEW 2



FIGURE 121. POSTTEST BIN A UPPER RAIL (FS500) DETACHMENT VIEW
AT FS VIEW 3



FIGURE 122. POSTTEST BIN A UPPER RAIL (FS500A) DETACHMENT VIEW
AT BIN VIEW 1

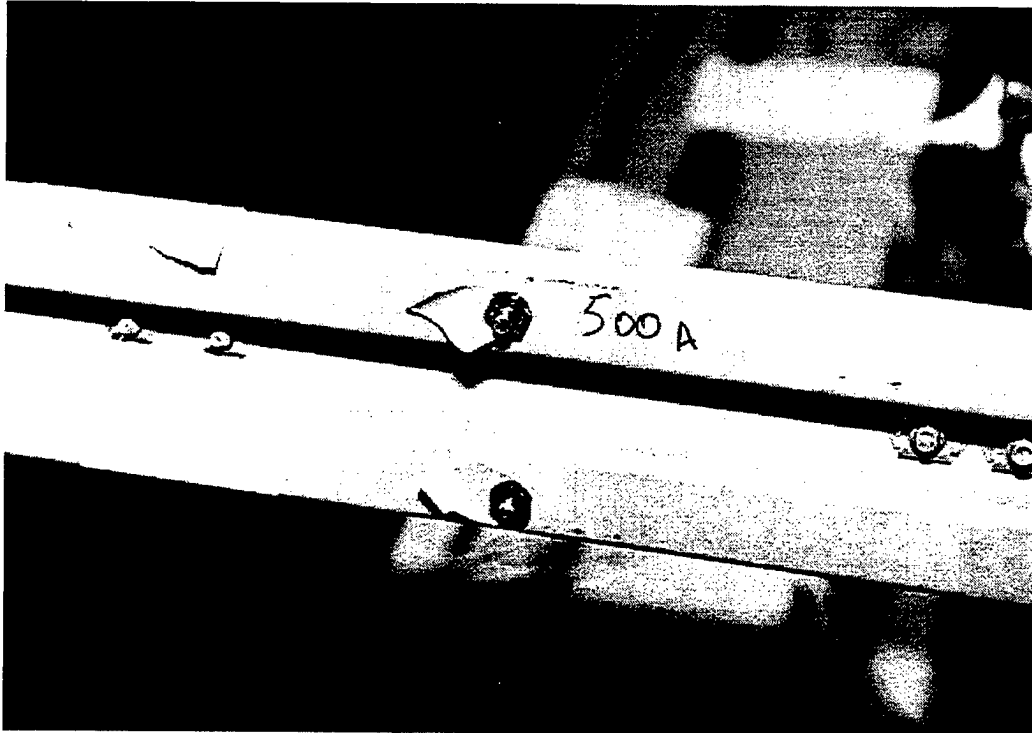


FIGURE 123. POSTTEST BIN A UPPER RAIL (FS500A) DETACHMENT VIEW
AT BIN VIEW 2

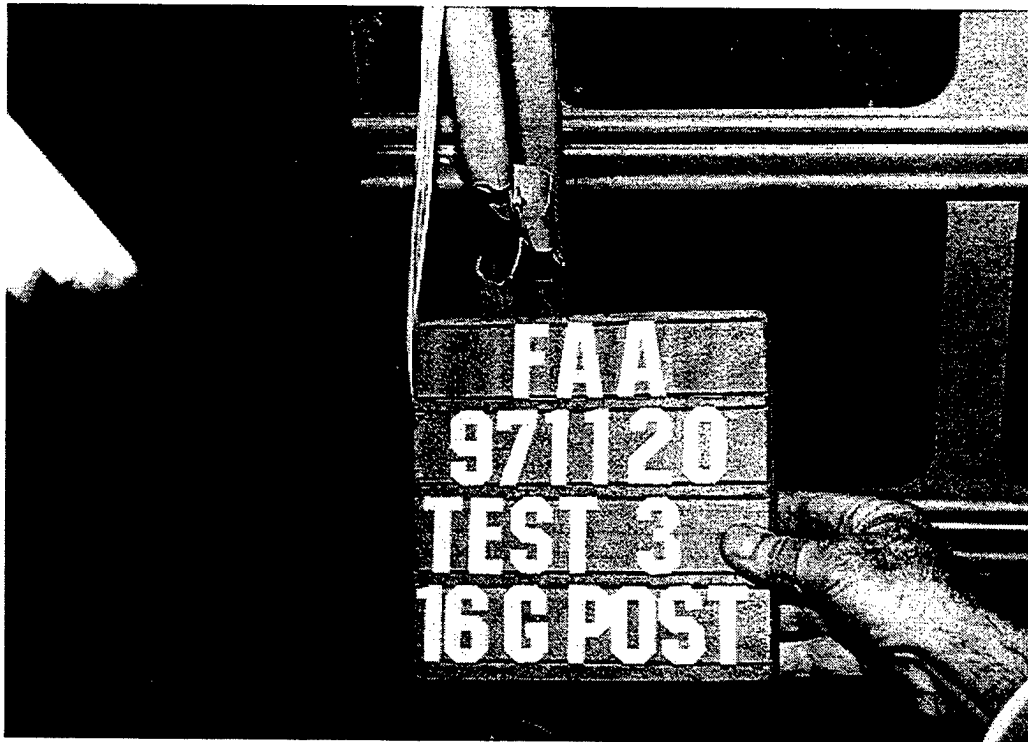


FIGURE 124. POSTTEST BIN A UPPER RAIL (FS500A) DETACHMENT VIEW
AT FS VIEW 1

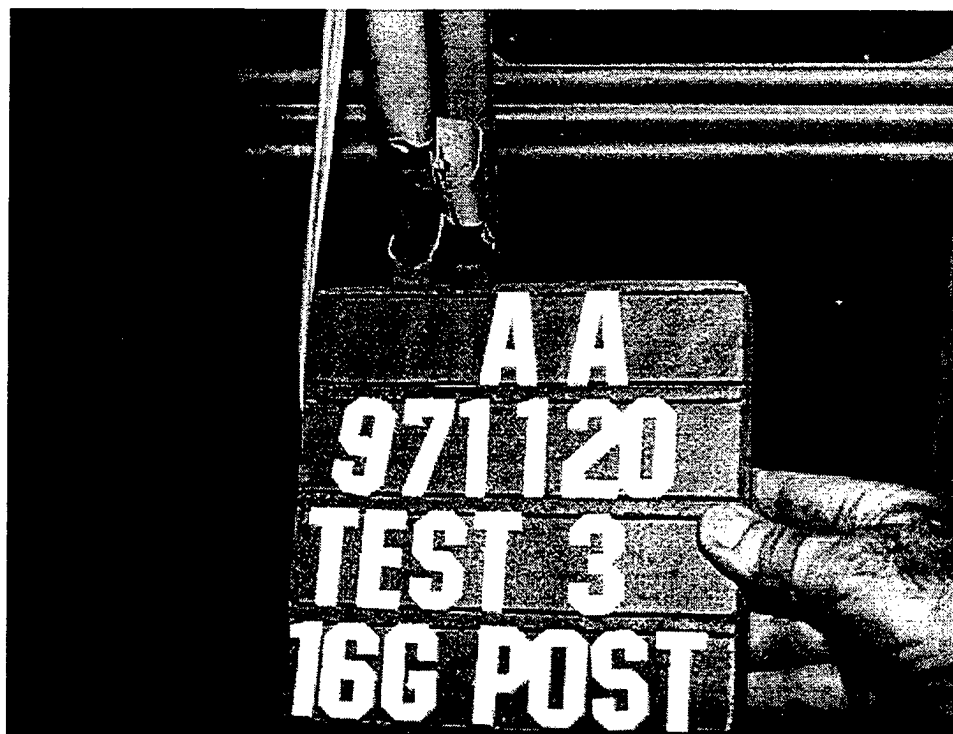


FIGURE 125. POSTTEST BIN A UPPER RAIL (FS500A) DETACHMENT VIEW
AT FS VIEW 2



FIGURE 126. POSTTEST BIN A UPPER RAIL (FS500A) DETACHMENT VIEW
AT FS VIEW 3

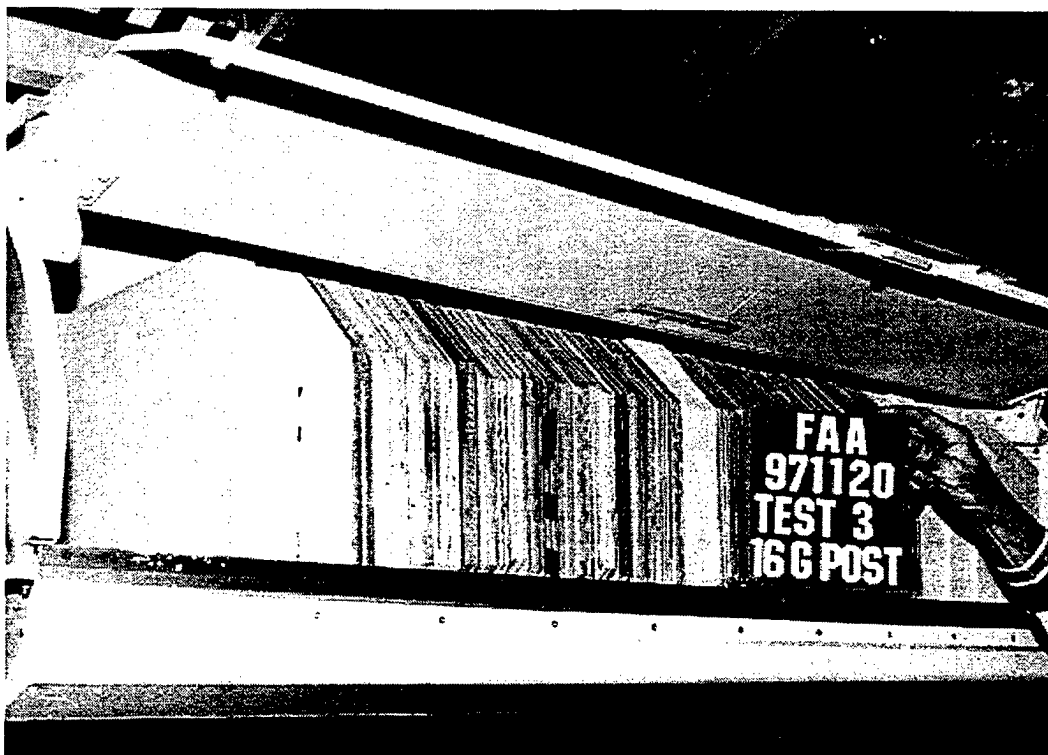


FIGURE 127. POSTTEST BIN B WITH DOOR OPEN SIDE VIEW

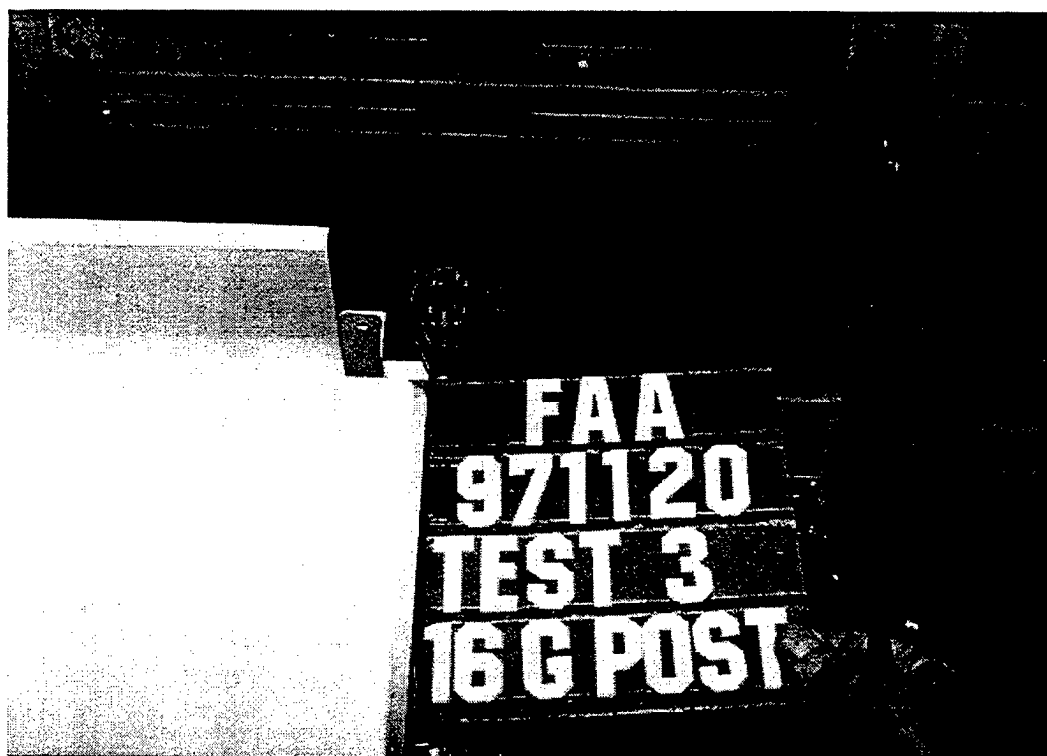


FIGURE 128. POSTTEST BIN B SUPPORT NUMBER 1 SIDE VIEW

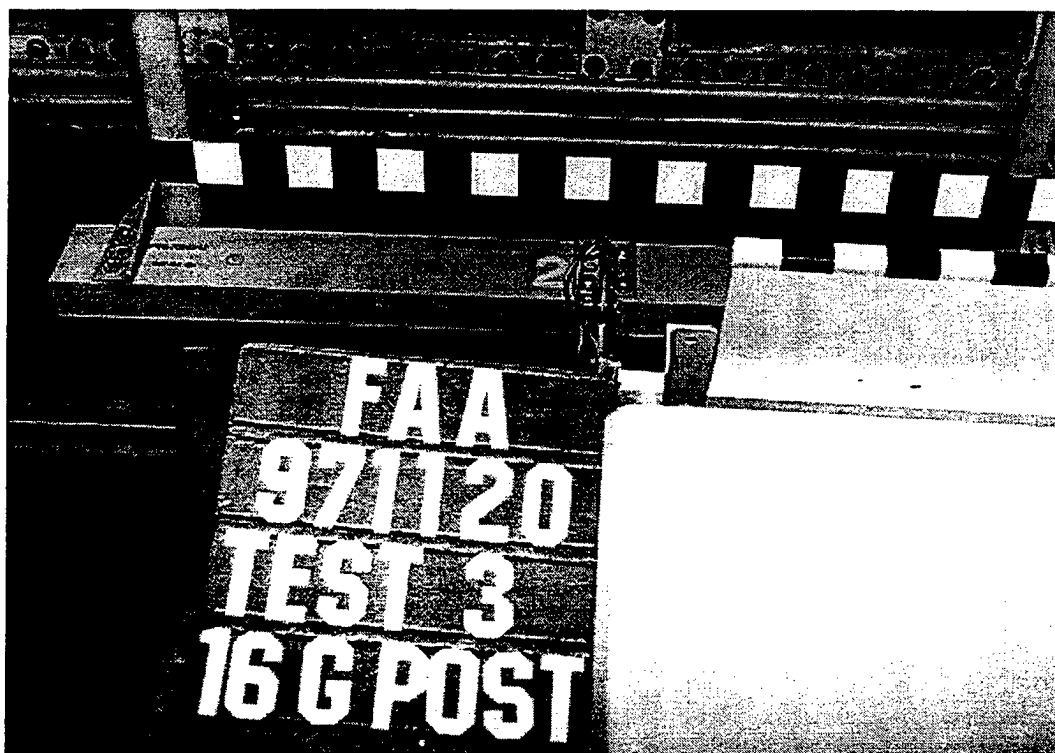


FIGURE 129. POSTTEST BIN B SUPPORT NUMBER 2 SIDE VIEW



FIGURE 130. POSTTEST BIN B SUPPORT NUMBERS 5, 6, 8, AND 9 LOWER VIEW



FIGURE 131. POSTTEST BIN B SUPPORT NUMBER 7 SIDE VIEW

APPENDIX A—INSTRUMENTATION LIST
SLED AND FUSELAGE INSTRUMENTATION

Channel Mnemonic	Channel Title
SLDXG	Sled Longitudinal Acceleration
SLDXV*	Sled Longitudinal Velocity
F420XG	Fuselage Floor BS 420 Longitudinal Acceleration
F420YG	Fuselage Floor BS 420 Lateral Acceleration
F420ZG	Fuselage Floor BS 420 Vertical Acceleration
FT420XV*	Fuselage Floor BS 420 Longitudinal Velocity
F500XG	Fuselage Floor BS 500 Longitudinal Acceleration
F500YG	Fuselage Floor BS 500 Lateral Acceleration
F500ZG	Fuselage Floor BS 500 Vertical Acceleration
FT500XV*	Fuselage Floor BS 500 Longitudinal Velocity
T420XG	Fuselage Top BS 420 Longitudinal Acceleration
T420ZG	Fuselage Top BS 420 Vertical Acceleration
T420XV*	Fuselage Top BS 420 Longitudinal Velocity
T500XG	Fuselage Top BS 500 Longitudinal Acceleration
T500ZG	Fuselage Top BS 500 Vertical Acceleration
T500XV*	Fuselage Top BS 500 Longitudinal Velocity
L440XG	Fuselage Left Side BS 440 Longitudinal Acceleration
L440YG	Fuselage Left Side BS 440 Lateral Acceleration
L440ZG	Fuselage Left Side BS 440 Vertical Acceleration
L440XV*	Fuselage Left Side BS 440 Longitudinal Velocity
L480XG	Fuselage Left Side BS 480 Longitudinal Acceleration
L480YG	Fuselage Left Side BS 480 Lateral Acceleration
L480ZG	Fuselage Left Side BS 480 Vertical Acceleration
L480XV*	Fuselage Left Side BS 480 Longitudinal Velocity
R440XG	Fuselage Right Side BS 440 Longitudinal Acceleration
R440YG	Fuselage Right Side BS 440 Lateral Acceleration
R440ZG	Fuselage Right Side BS 440 Vertical Acceleration
R440XV*	Fuselage Right Side BS 440 Longitudinal Velocity
R480XG	Fuselage Right Side BS 480 Longitudinal Acceleration
R480YG	Fuselage Right Side BS 480 Lateral Acceleration
R480ZG	Fuselage Right Side BS 480 Vertical Acceleration
R480XV*	Fuselage Right Side BS 480 Longitudinal Velocity

* CALCULATED DATA CHANNELS (integration of acceleration)

OVERHEAD STOWAGE BIN INSTRUMENTATION

Channel Mnemonic	Channel Title
BAFXG	Bin A Front Longitudinal Acceleration
BAFYG	Bin A Front Lateral Acceleration
BAFZG	Bin A Front Vertical Acceleration
BAFXV*	Bin A Front Longitudinal Velocity
BACXG	Bin A Center Longitudinal Acceleration
BACYG	Bin A Center Lateral Acceleration
BACZG	Bin A Center Vertical Acceleration
BACXV*	Bin A Center Longitudinal Velocity
BAAXG	Bin A Aft Longitudinal Acceleration
BAAYG	Bin A Aft Lateral Acceleration
BAAZG	Bin A Aft Vertical Acceleration
BAAXV*	Bin A Aft Longitudinal Velocity
AL75XF	Bin A Lower Front Support Longitudinal Force
AL75YF	Bin A Lower Front Support Lateral Force
AL75ZF	Bin A Lower Front Support Vertical Force
AL76XF	Bin A Lower Mid Support Longitudinal Force
AL76YF	Bin A Lower Mid Support Lateral Force
AL76ZF	Bin A Lower Mid Support Vertical Force
AL78XF	Bin A Lower Aft Support Longitudinal Force
AL78YF	Bin A Lower Aft Support Lateral Force
AL78ZF	Bin A Lower Aft Support Vertical Force
AU78XA	Bin A Upper Front Support Inner Longitudinal Force
AU78XB	Bin A Upper Front Support Outer Longitudinal Force
AU78ZC	Bin A Upper Front Support Outer Vertical Force
AU78ZD	Bin A Upper Front Support Inner Vertical Force
AU76XA	Bin A Upper Mid Support Inner Longitudinal Force
AU76XB	Bin A Upper Mid Support Outer Longitudinal Force
AU76ZC	Bin A Upper Mid Support Outer Vertical Force
AU76ZD	Bin A Upper Mid Support Inner Vertical Force
AU75XA	Bin A Upper Aft Support Inner Longitudinal Force
AU75XB	Bin A Upper Aft Support Outer Longitudinal Force
AU75ZC	Bin A Upper Aft Support Outer Vertical Force
AU75ZD	Bin A Upper Aft Support Inner Vertical Force
BBFXG	Bin B Front Longitudinal Acceleration
BBFYG	Bin B Front Lateral Acceleration
BBFZG	Bin B Front Vertical Acceleration
BBFXV*	Bin B Front Longitudinal Velocity
BBCXG	Bin B Center Longitudinal Acceleration
BBCYG	Bin B Center Lateral Acceleration

* CALCULATED DATA CHANNELS (integration of acceleration)

OVERHEAD STOWAGE BIN INSTRUMENTATION (Continued)

Channel Mnemonic	Channel Title
BBCZG	Bin B Center Vertical Acceleration
BBCXV*	Bin B Center Longitudinal Velocity
BBAXG	Bin B Aft Longitudinal Acceleration
BBAYG	Bin B Aft Lateral Acceleration
BBAZG	Bin B Aft Vertical Acceleration
BBAXV*	Bin B Aft Longitudinal Velocity
B1ZF	Bin B Aft Bracket 1 Vertical Force
B2ZF	Bin B Fwd Bracket 2 Vertical Force
B3ZF	Bin B Fwd Rod 3 Vertical Force
B4ZF	Bin B Aft Rod 4 Vertical Force
B5XF	Bin B Aft Plate Bracket 5 Longitudinal Force
B6XF	Bin B Fwd Plate Bracket 6 Longitudinal Force
B7YF1	Bin B L Bracket 7 Gage 1 Lateral Force
B7YF2	Bin B L Bracket 7 Gage 2 Lateral Force
B8YF1	Bin B L Bracket 8 Gage 1 Lateral Force
B8YF2	Bin B L Bracket 8 Gage 2 Lateral Force
B9YF1	Bin B L Bracket 9 Gage 1 Lateral Force
B9YF2	Bin B L Bracket 9 Gage 2 Lateral Force
B10YF1	Bin B L Bracket 10 Gage 1 Lateral Force
B10YF2	Bin B L Bracket 10 Gage 2 Lateral Force
B11YF1	Bin B L Bracket 11 Gage 1 Lateral Force
B11YF2	Bin B L Bracket 11 Gage 2 Lateral Force
BINAXD	Bin A Longitudinal Displacement
BINBXD	Bin B Longitudinal Displacement

* CALCULATED DATA CHANNELS (integration of acceleration)

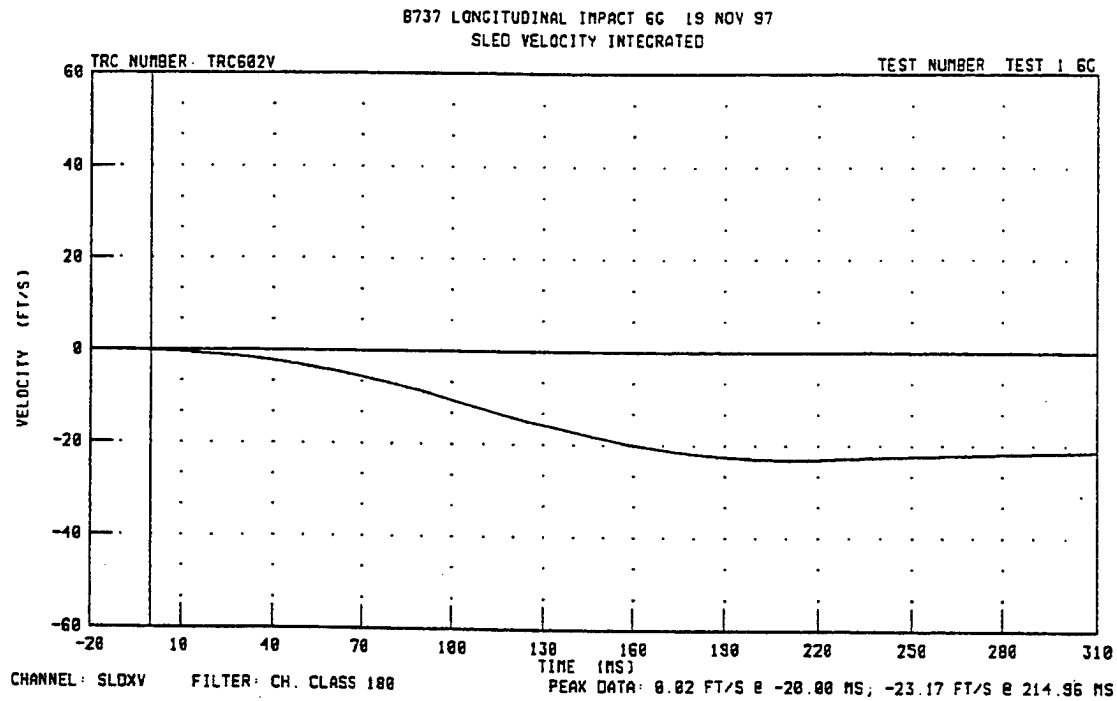
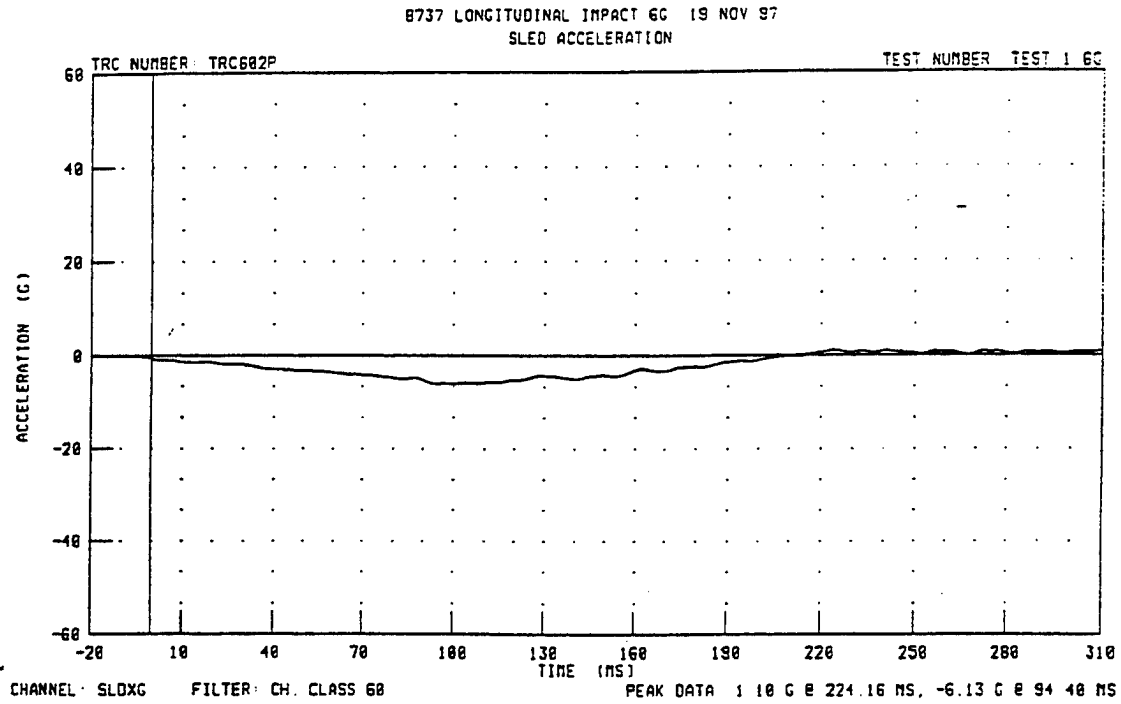
AUXILIARY FUEL TANK

Channel Mnemonic	Channel Title
FTLXG	Fuel Tank Left Longitudinal Acceleration
FTLYG	Fuel Tank Left Lateral Acceleration
FTLZG	Fuel Tank Left Vertical Acceleration
FTLXV*	Fuel Tank Left Longitudinal Velocity
FTRXG	Fuel Tank Right Longitudinal Acceleration
FTRYG	Fuel Tank Right Lateral Acceleration
FTRZG	Fuel Tank Right Vertical Acceleration
FTRXV*	Fuel Tank Right Longitudinal Velocity
FTTXG	Fuel Tank Top Longitudinal Acceleration
FTTXV*	Fuel Tank Top Longitudinal Velocity
FTXD	Fuel Tank Longitudinal Displacement

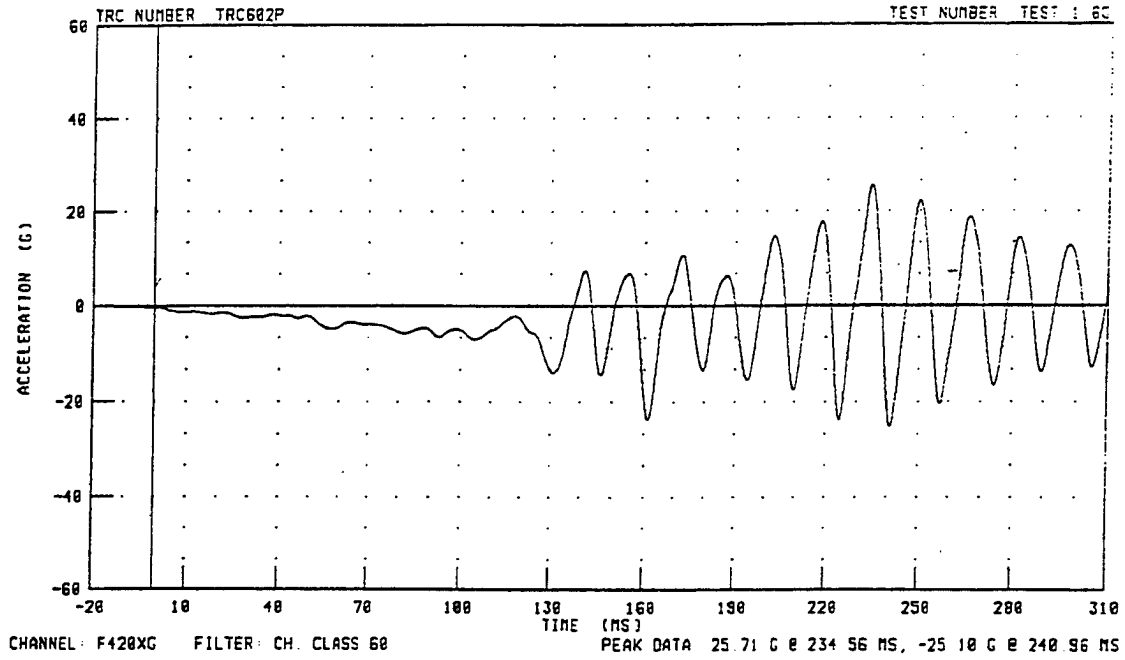
* CALCULATED DATA CHANNELS (integration of acceleration)

APPENDIX B—DATA PLOTS

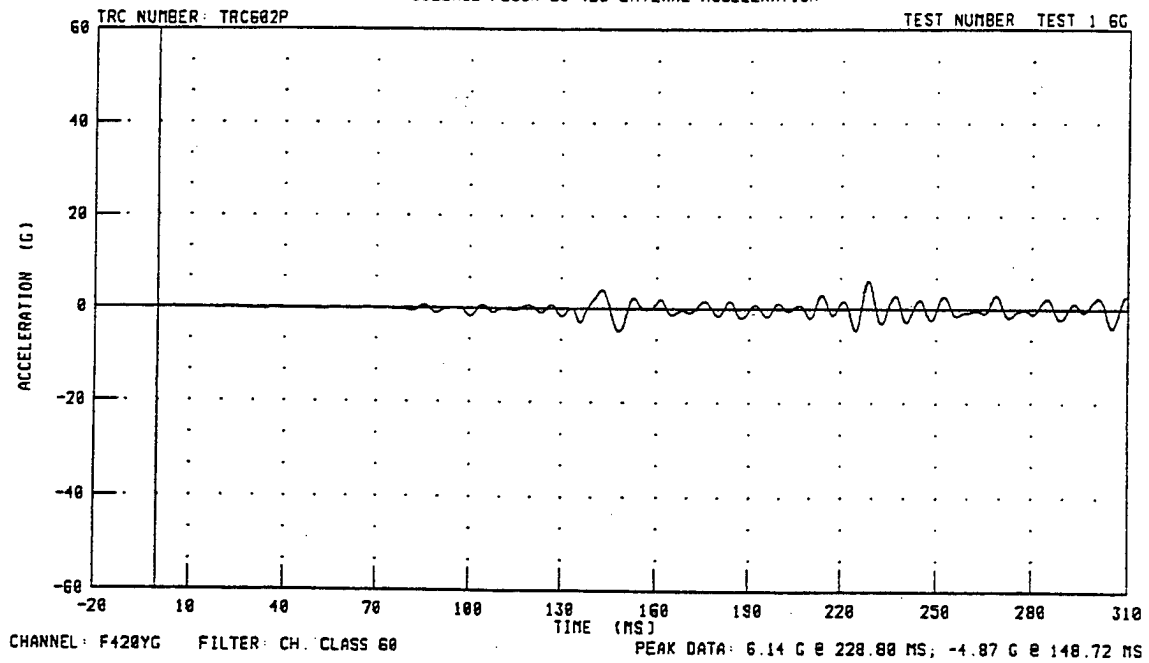
TEST 1



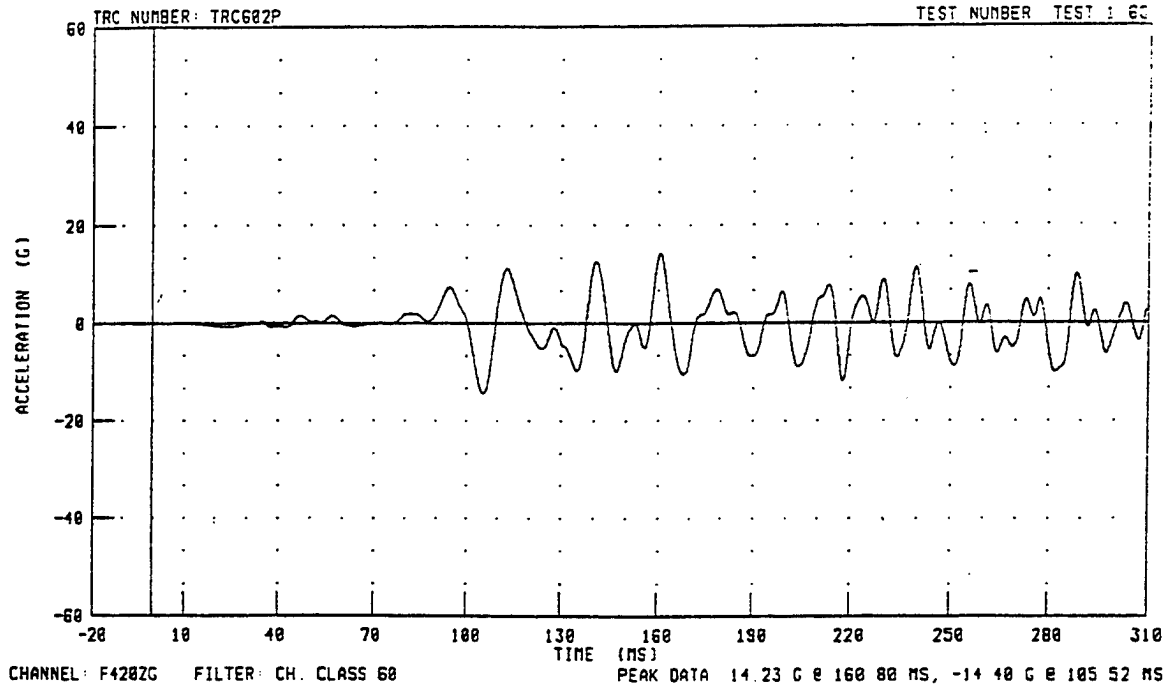
8737 LONGITUDINAL IMPACT 6G 19 NOV 97
FUSELAGE FLOOR BS 420 LONGITUDINAL ACCELERATION



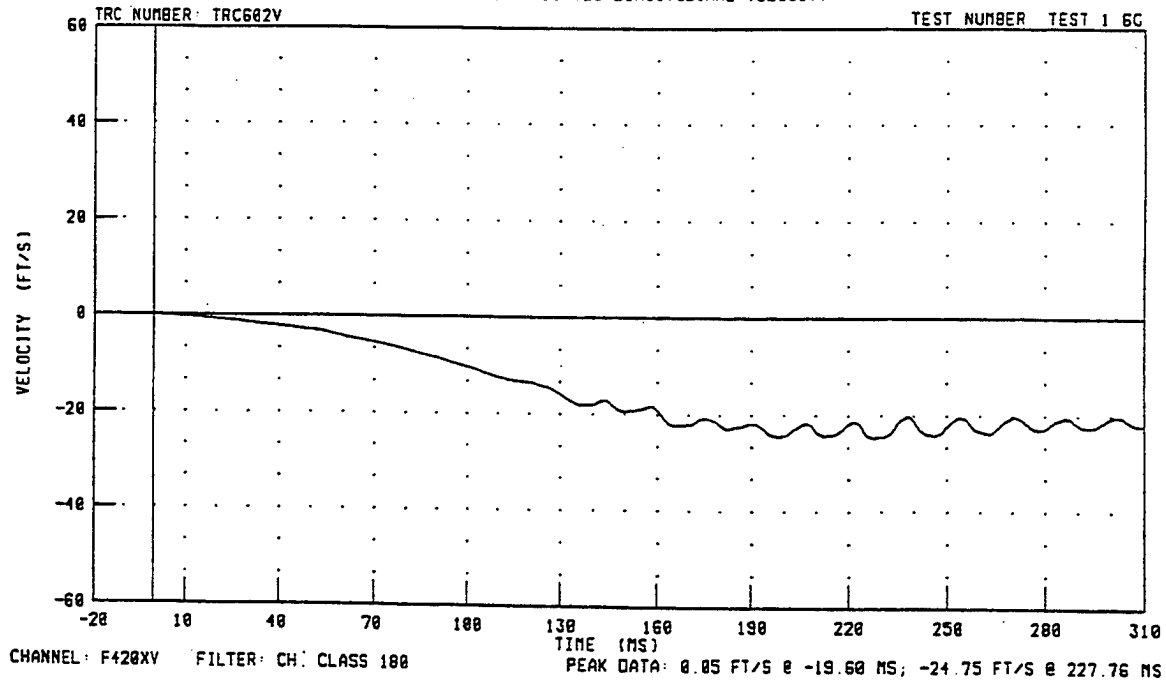
8737 LONGITUDINAL IMPACT 6G 19 NOV 97
FUSELAGE FLOOR BS 420 LATERAL ACCELERATION



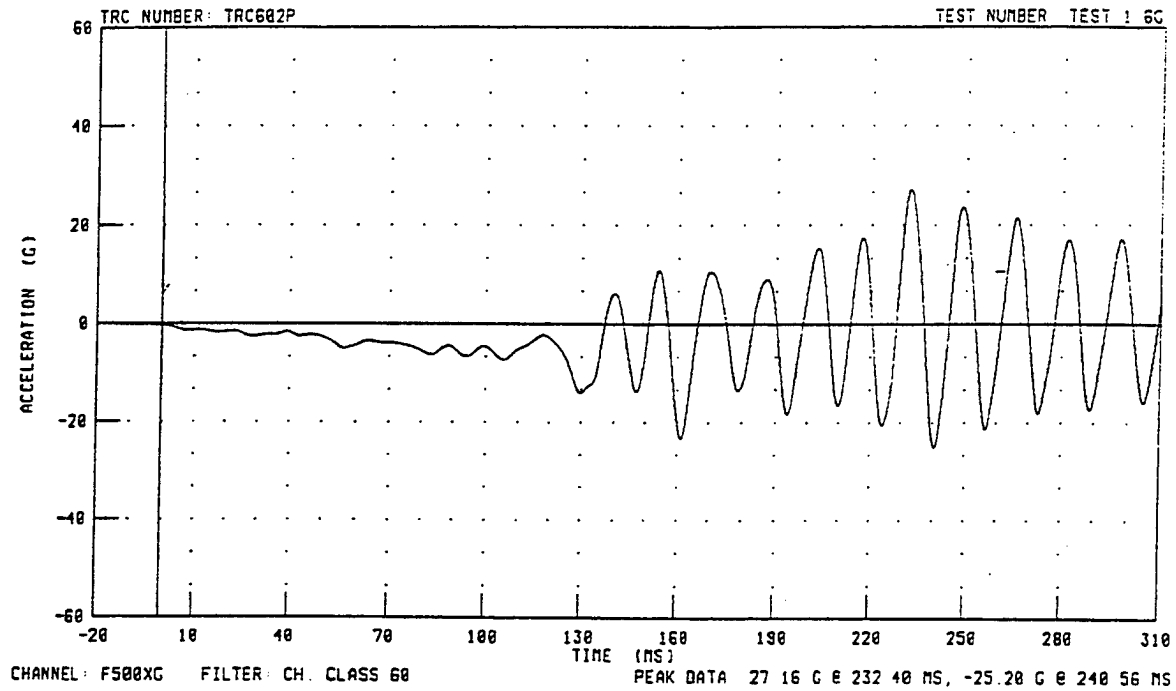
8737 LONGITUDINAL IMPACT 6G 19 NOV 97
FUSELAGE FLOOR BS 420 VERTICAL ACCELERATION



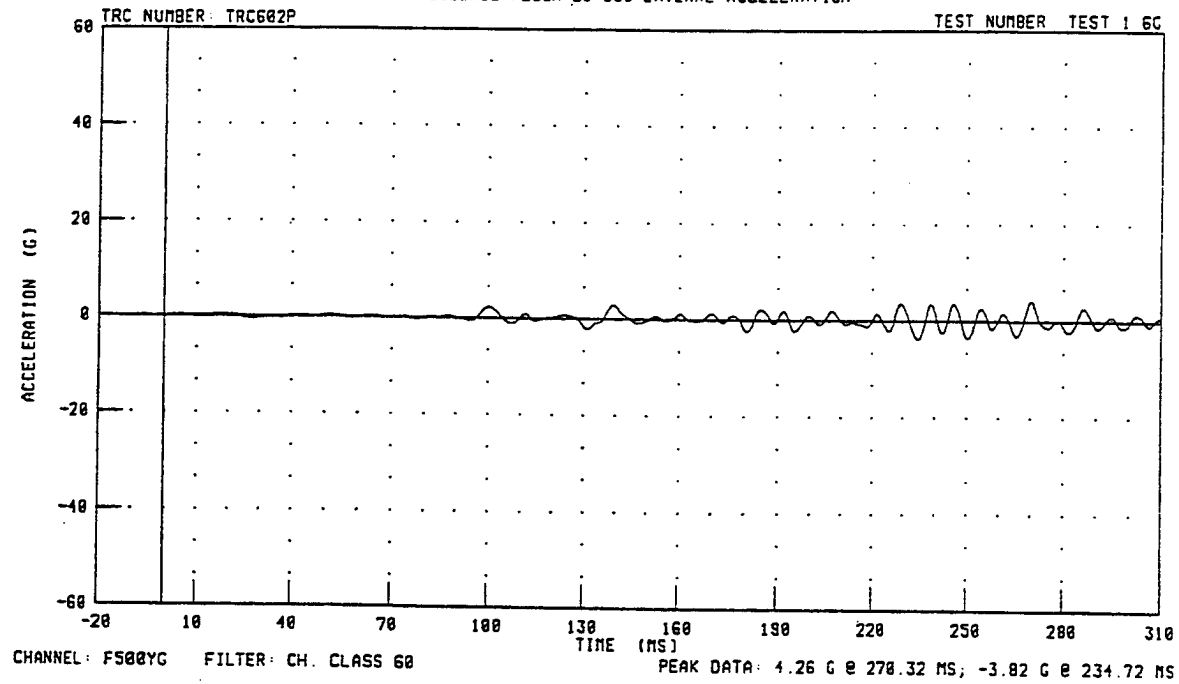
8737 LONGITUDINAL IMPACT 6G 19 NOV 97
FUSELAGE FLOOR BS 420 LONGITUDINAL VELOCITY



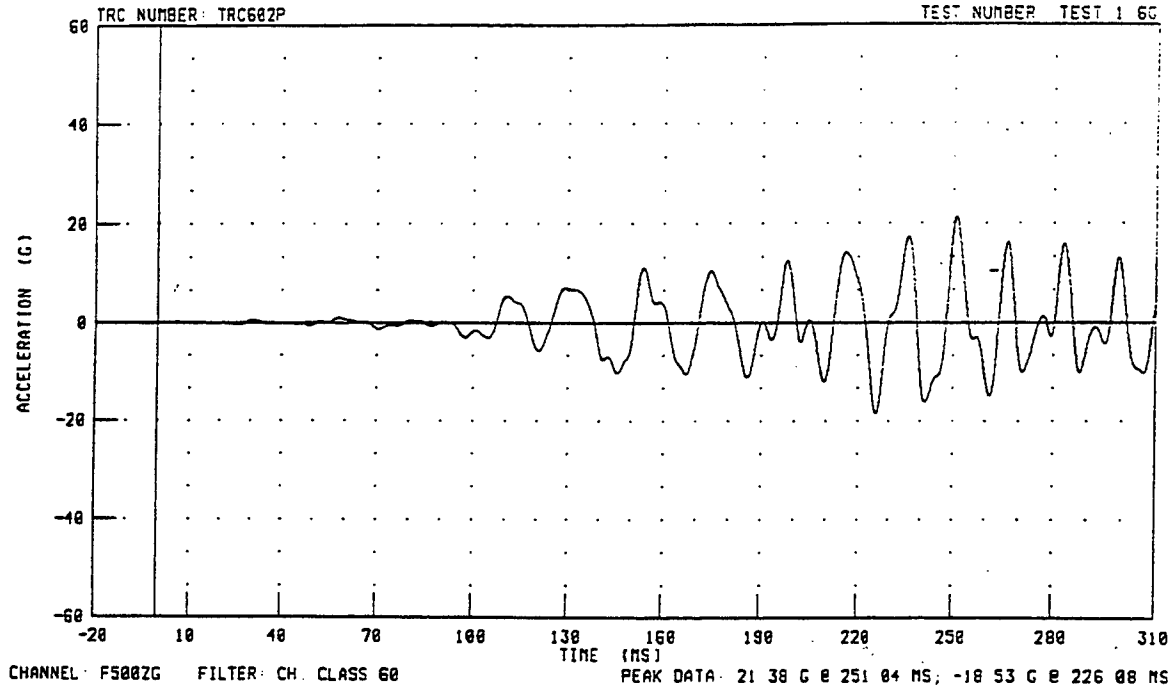
B737 LONGITUDINAL IMPACT 6G 19 NOV 97
FUSELAGE FLOOR BS 500 LONGITUDINAL ACCELERATION



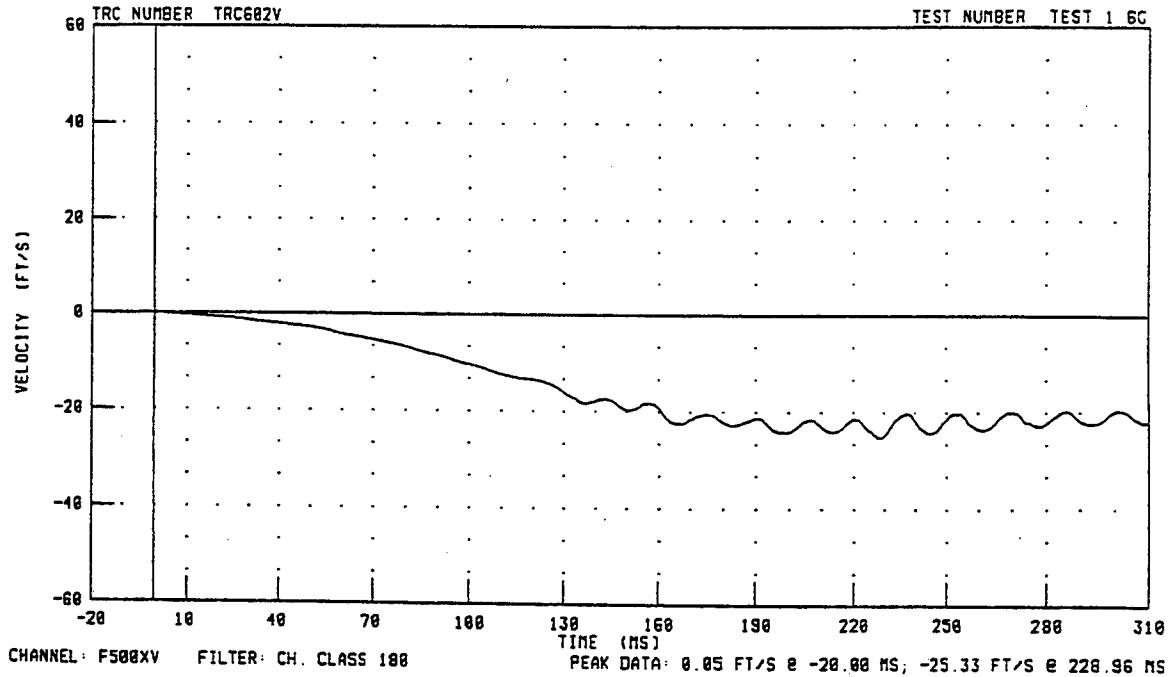
B737 LONGITUDINAL IMPACT 6G 19 NOV 97
FUSELAGE FLOOR BS 500 LATERAL ACCELERATION



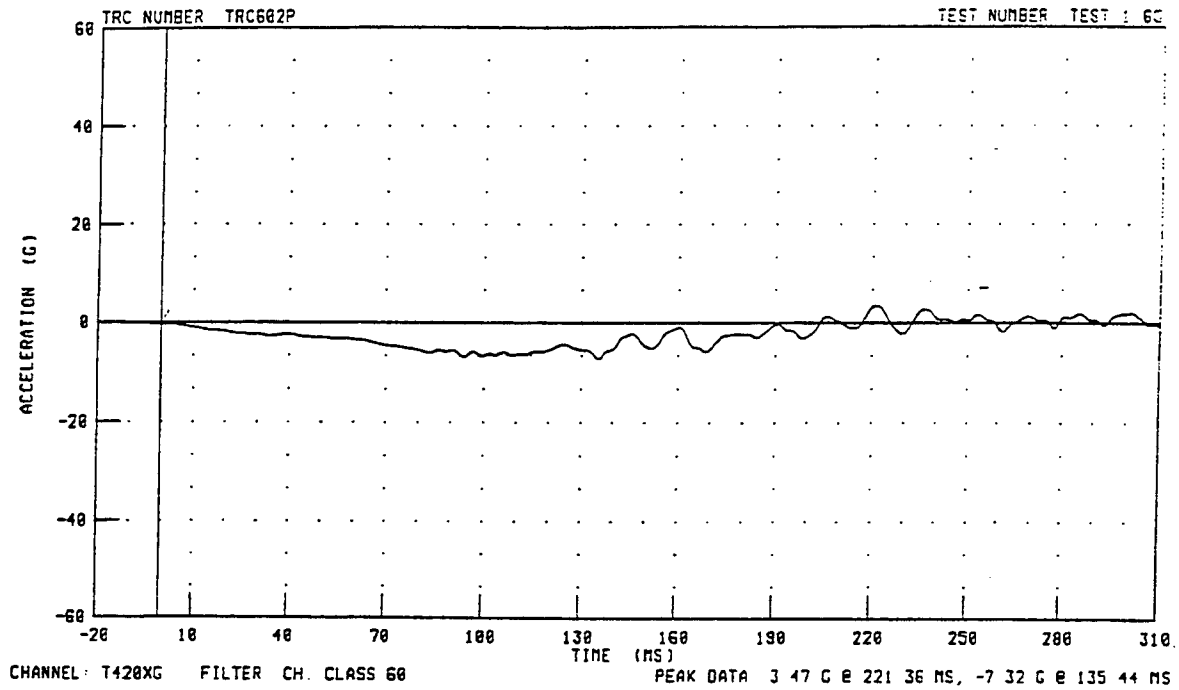
B737 LONGITUDINAL IMPACT 6G 19 NOV 97
FUSELAGE FLOOR BS 500 VERTICAL ACCELERATION



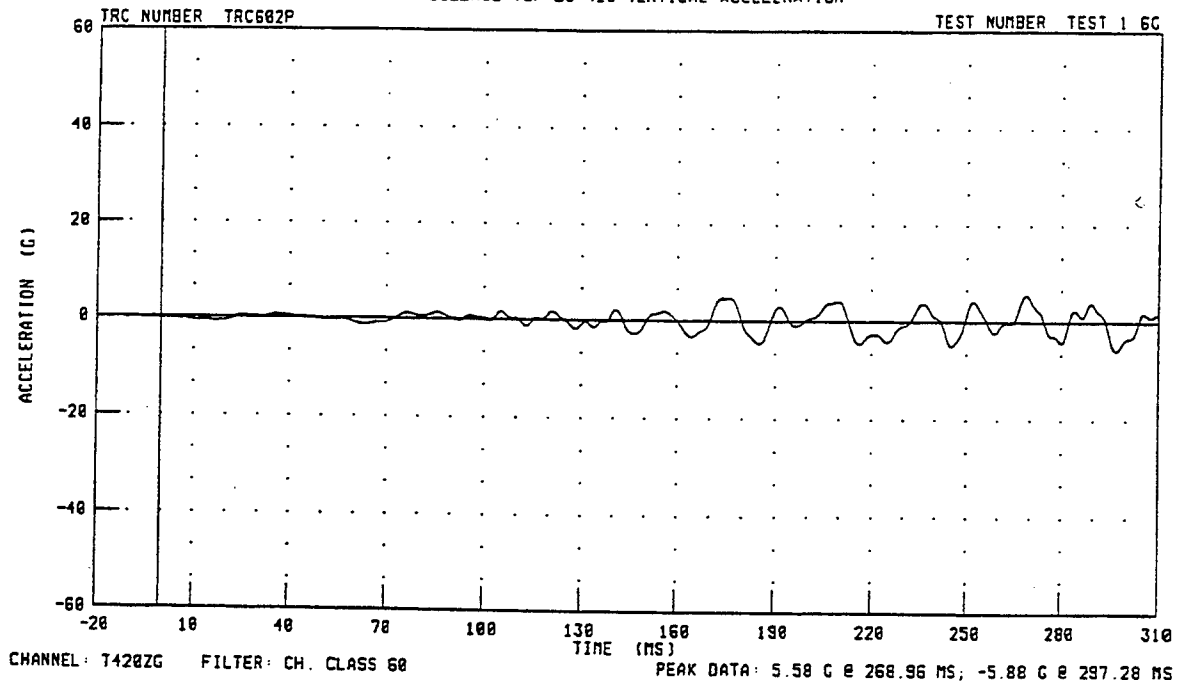
B737 LONGITUDINAL IMPACT 6G 19 NOV 97
FUSELAGE FLOOR BS 500 LONGITUDINAL VELOCITY



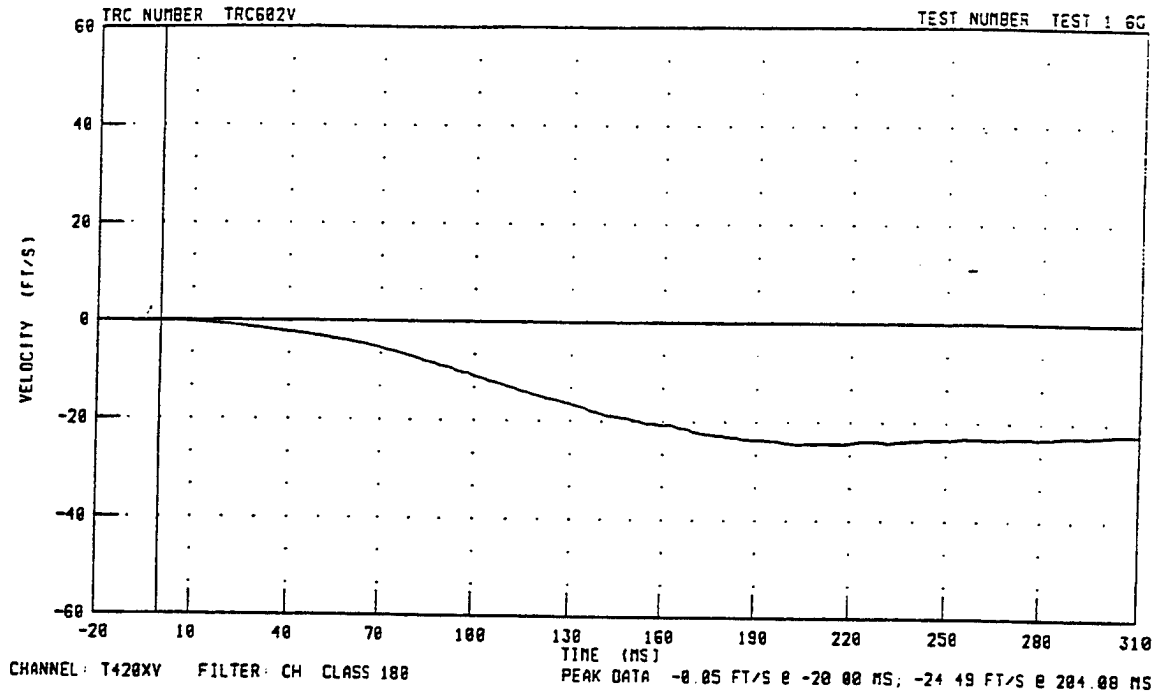
B737 LONGITUDINAL IMPACT 6G 19 NOV 97
FUSELAGE TOP BS 420 LONGITUDINAL ACCELERATION



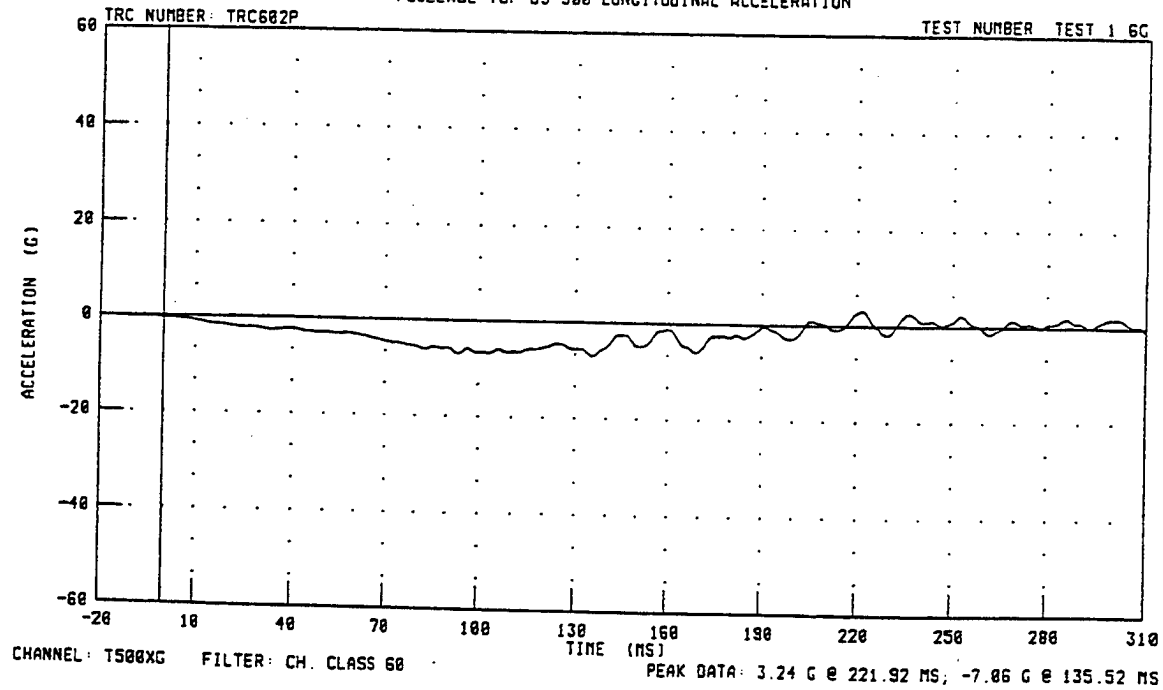
B737 LONGITUDINAL IMPACT 6G 19 NOV 97
FUSELAGE TOP BS 420 VERTICAL ACCELERATION



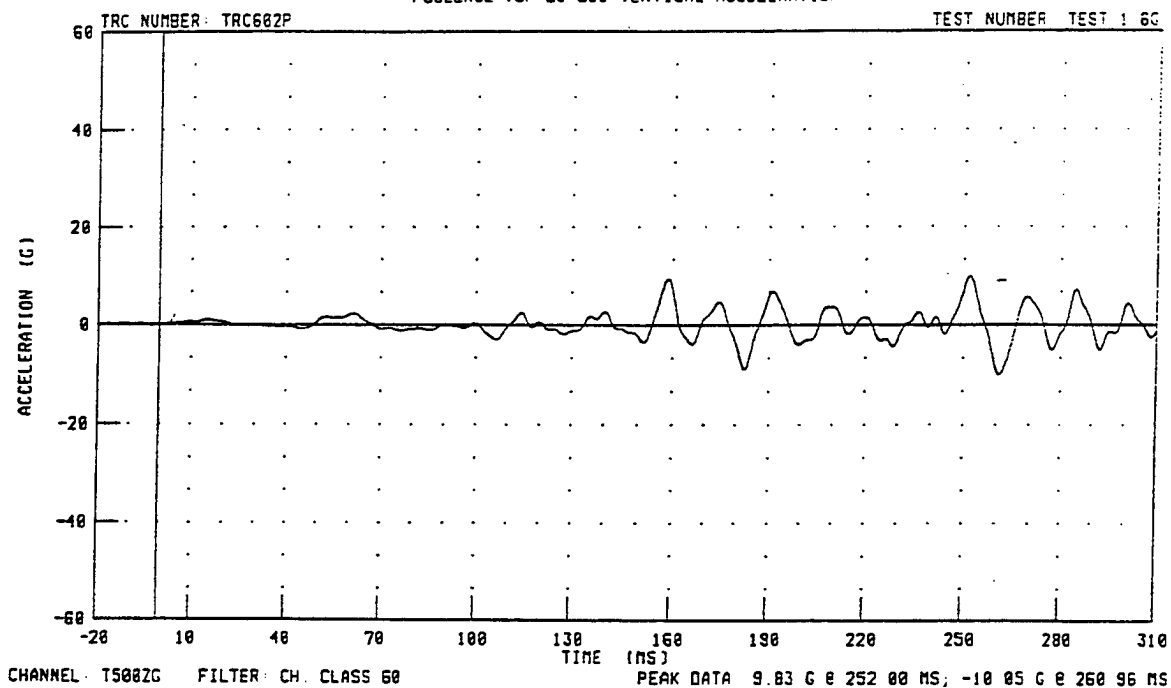
B737 LONGITUDINAL IMPACT GC 19 NOV 97
FUSELAGE TOP BS 420 LONGITUDINAL VELOCITY



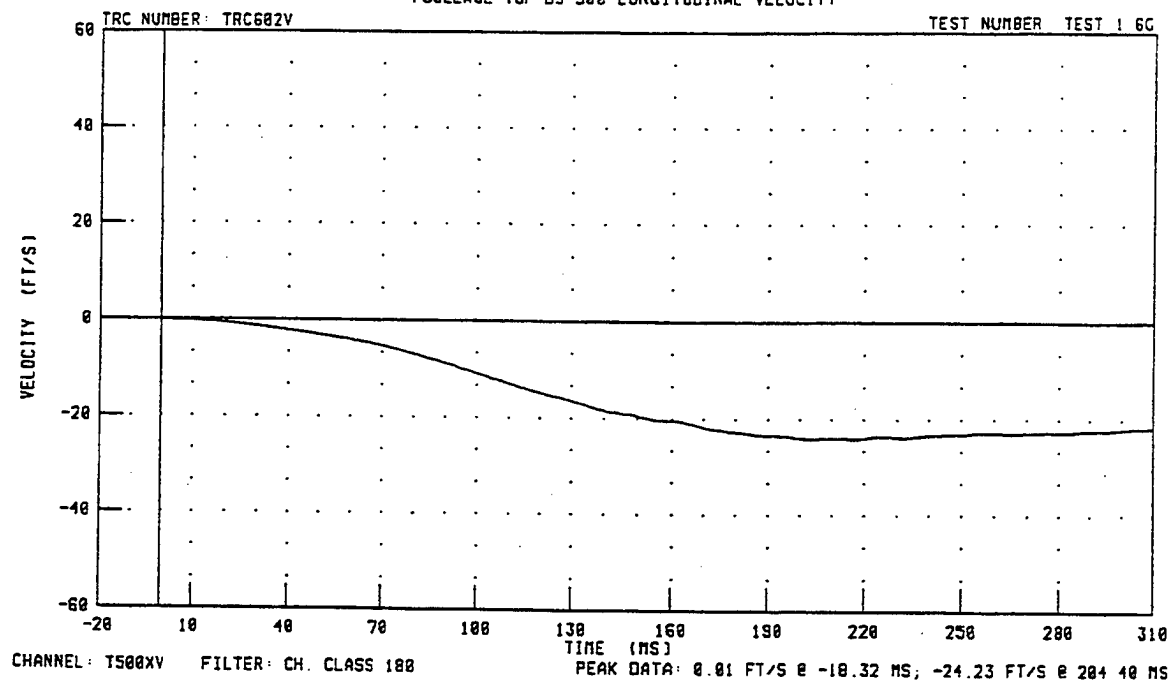
B737 LONGITUDINAL IMPACT GC 19 NOV 97
FUSELAGE TOP BS 500 LONGITUDINAL ACCELERATION



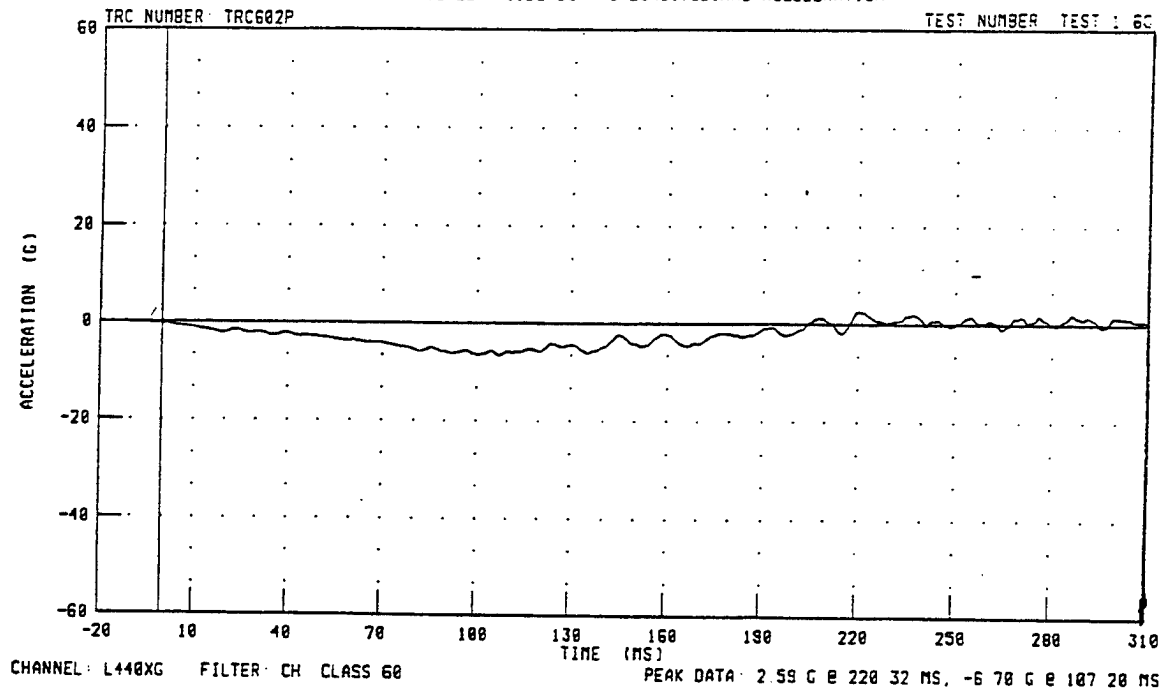
8737 LONGITUDINAL IMPACT 6G 19 NOV 97
FUSELAGE TOP BS 500 VERTICAL ACCELERATION



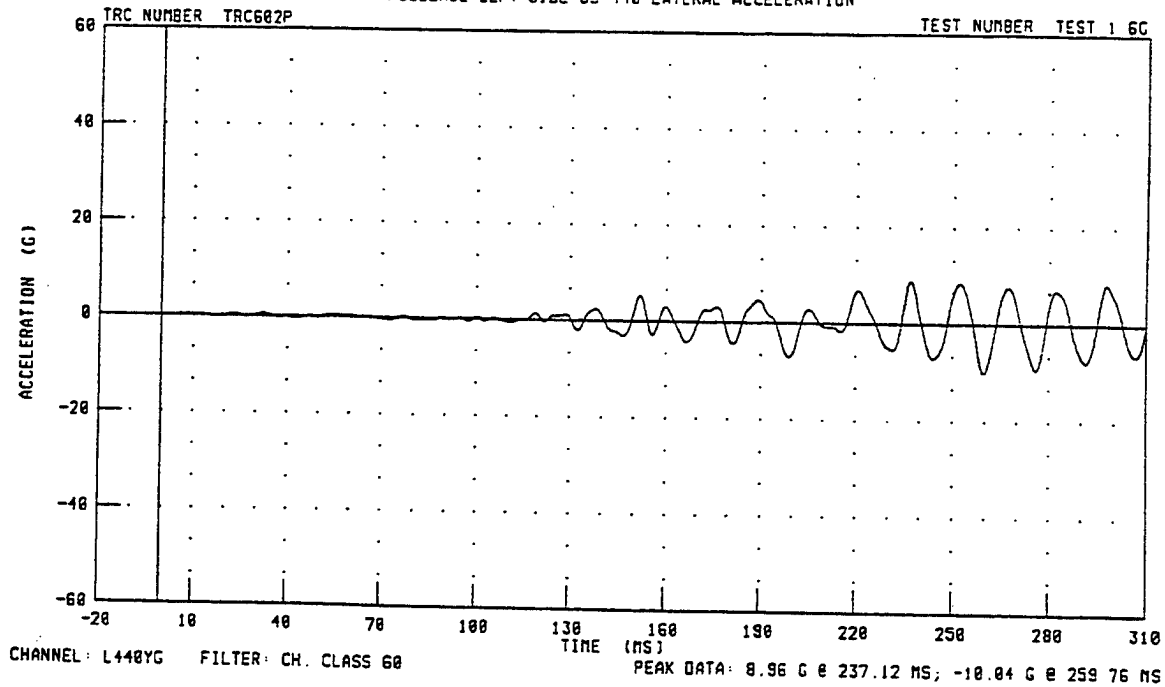
8737 LONGITUDINAL IMPACT 6G 19 NOV 97
FUSELAGE TOP BS 500 LONGITUDINAL VELOCITY



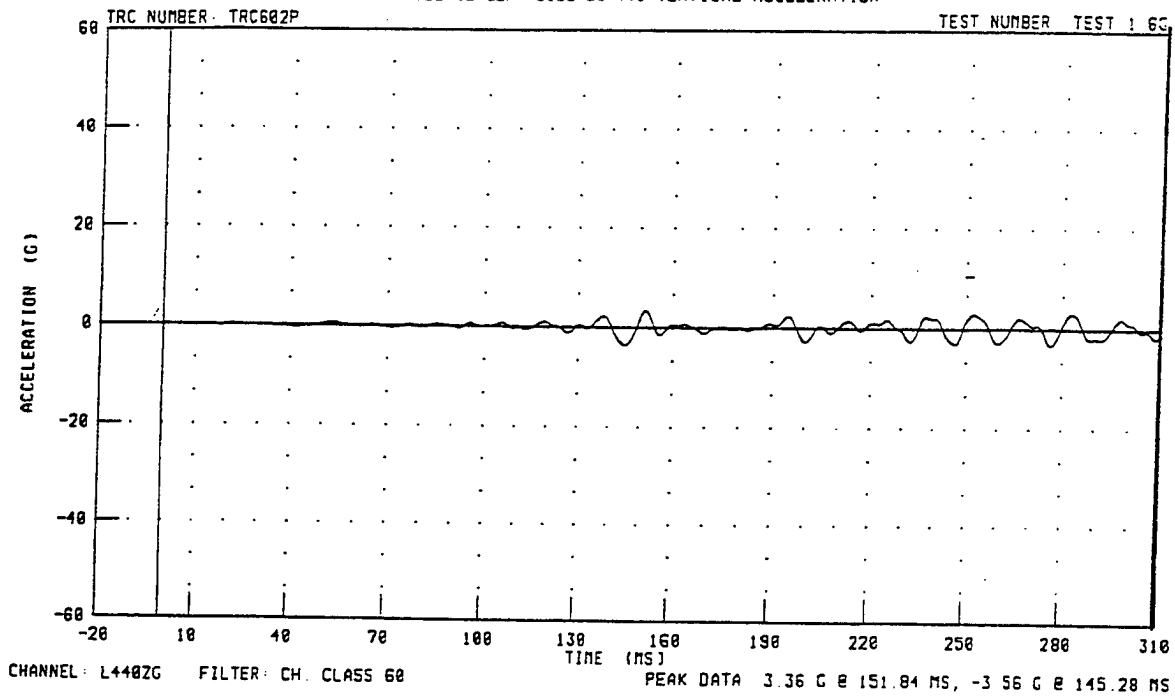
B737 LONGITUDINAL IMPACT 6G 19 NOV 97
FUSELAGE LEFT SIDE BS 440 LONGITUDINAL ACCELERATION



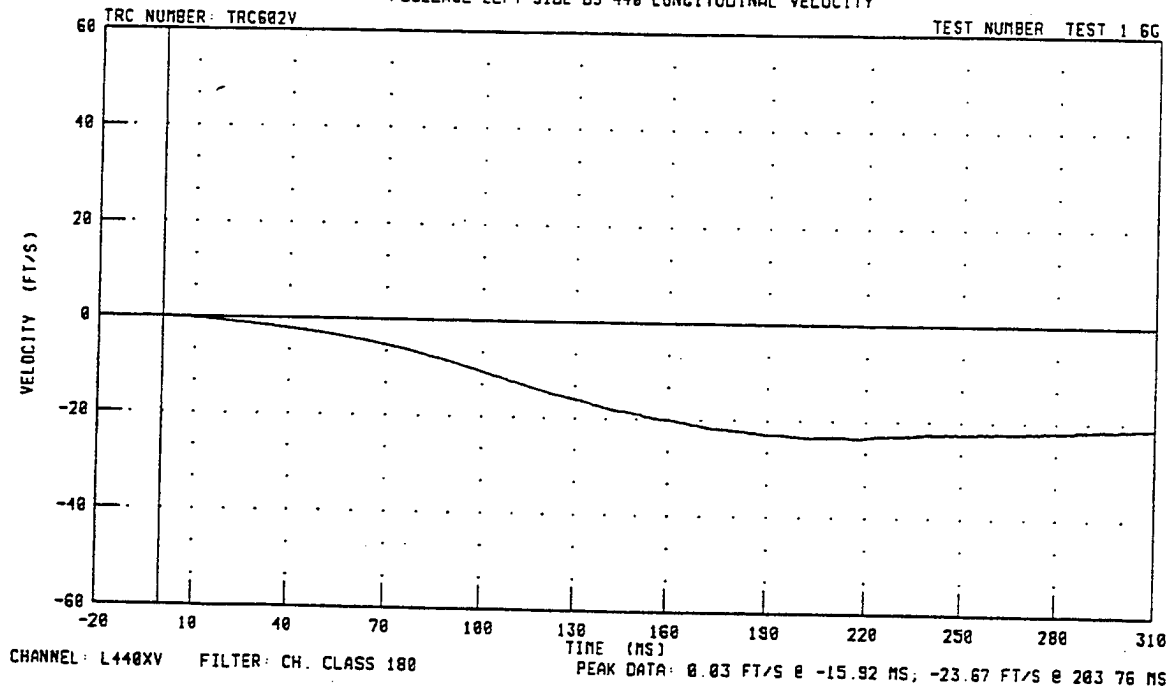
B737 LONGITUDINAL IMPACT 6G 19 NOV 97
FUSELAGE LEFT SIDE BS 440 LATERAL ACCELERATION



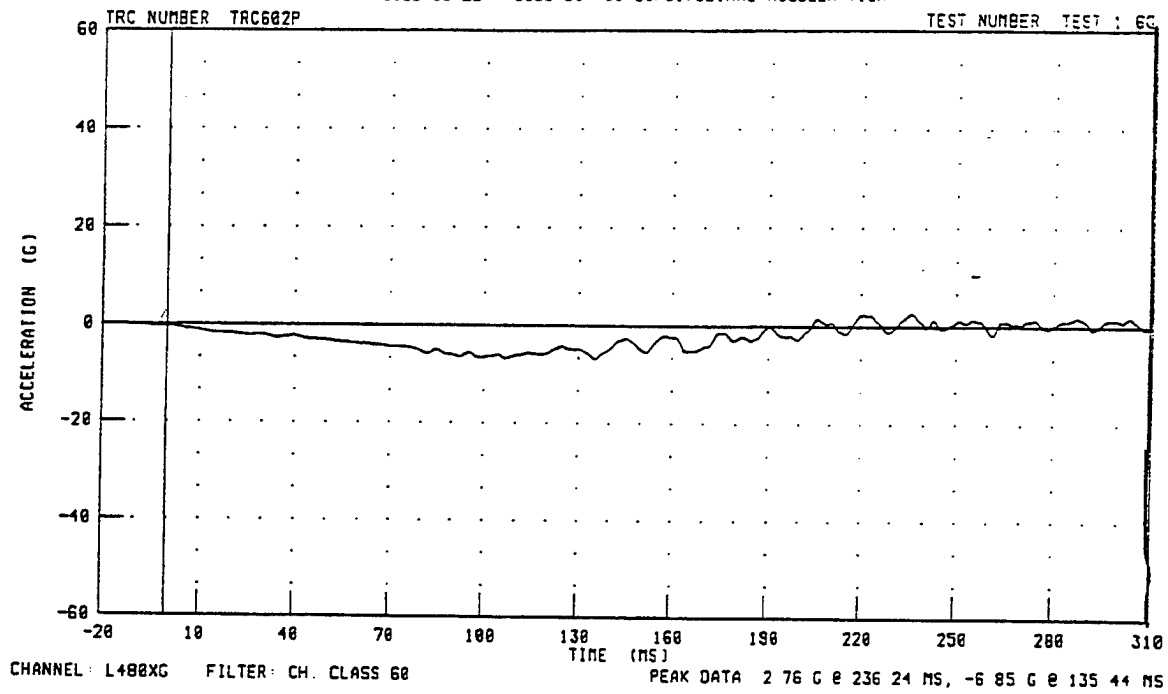
B737 LONGITUDINAL IMPACT 6G 19 NOV 97
FUSELAGE LEFT SIDE BS 440 VERTICAL ACCELERATION



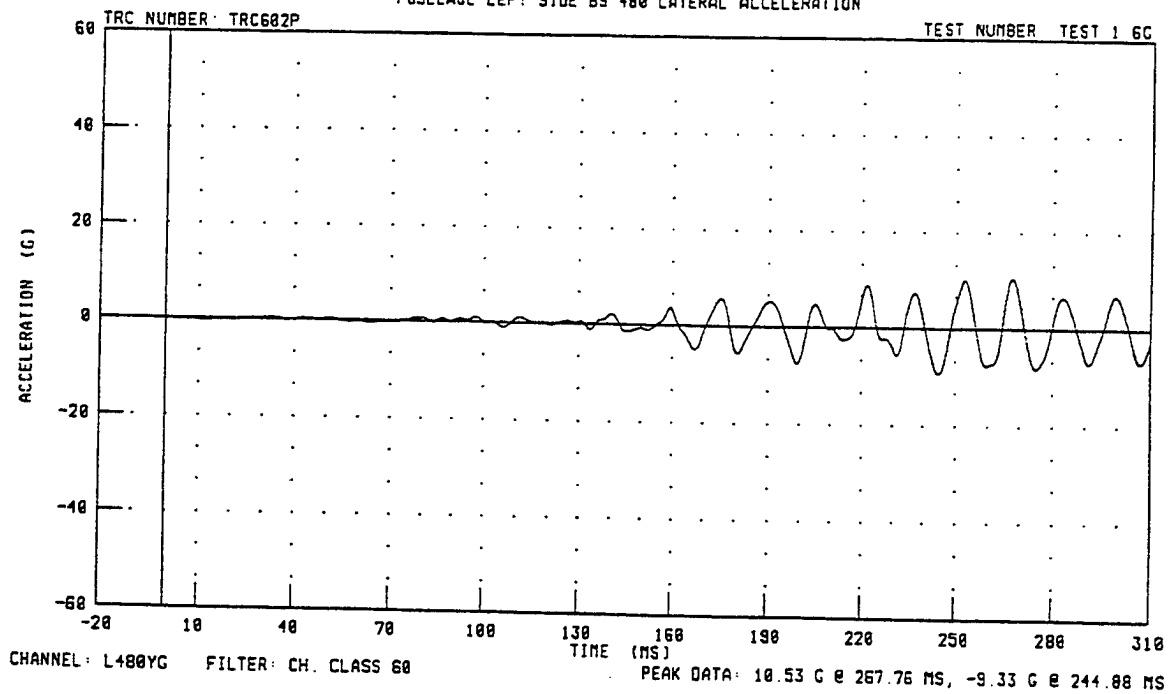
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FUSELAGE LEFT SIDE BS 440 LONGITUDINAL VELOCITY



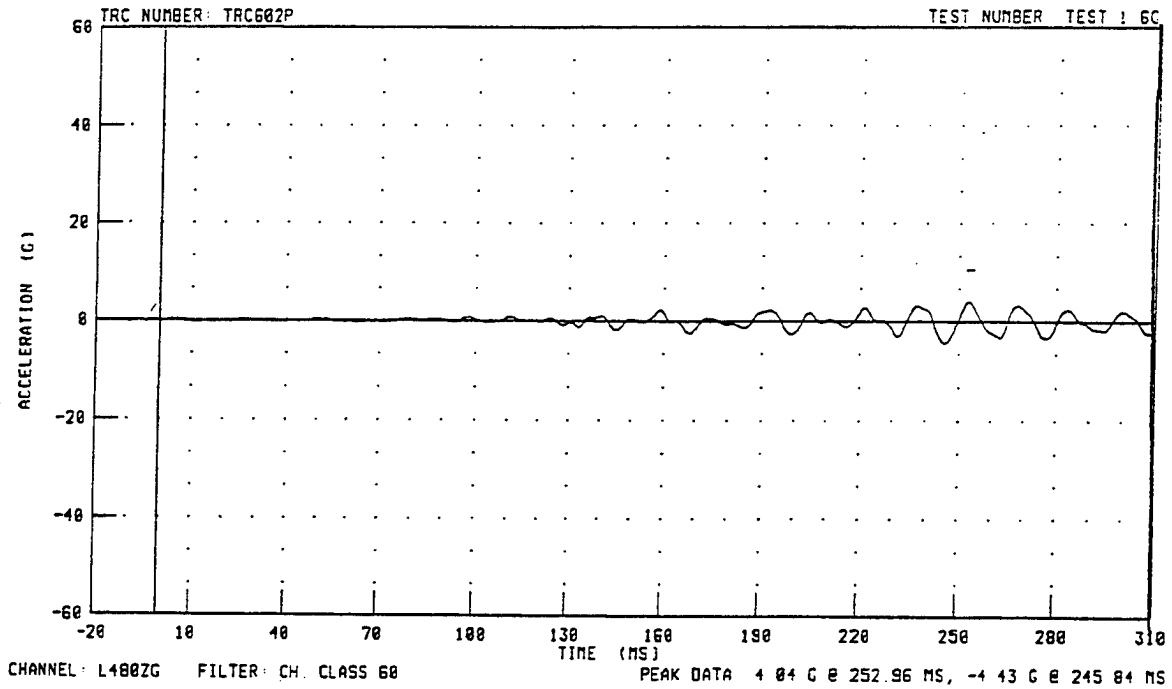
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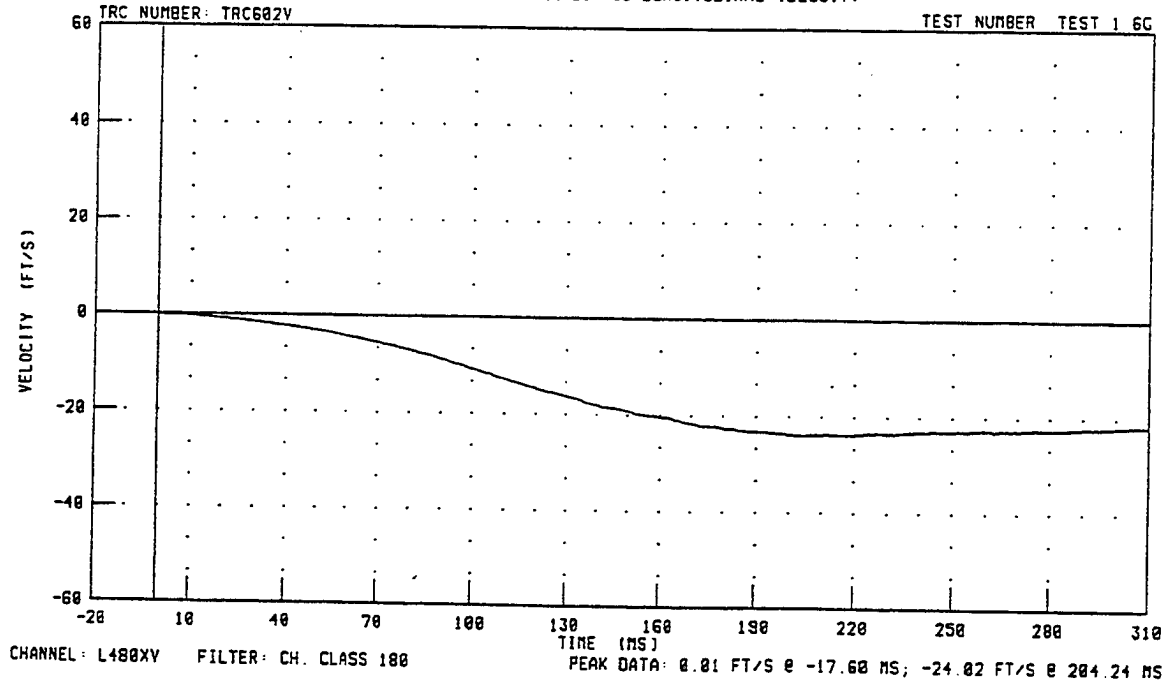
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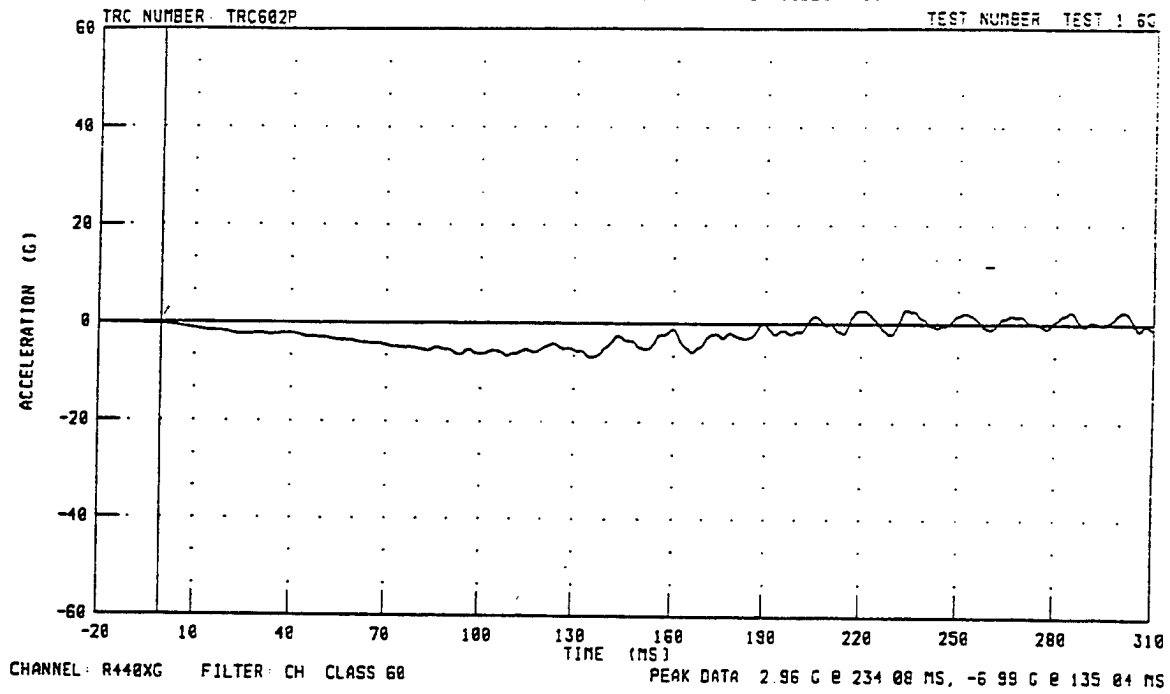
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FUSELAGE LEFT SIDE BS 480 VERTICAL ACCELERATION



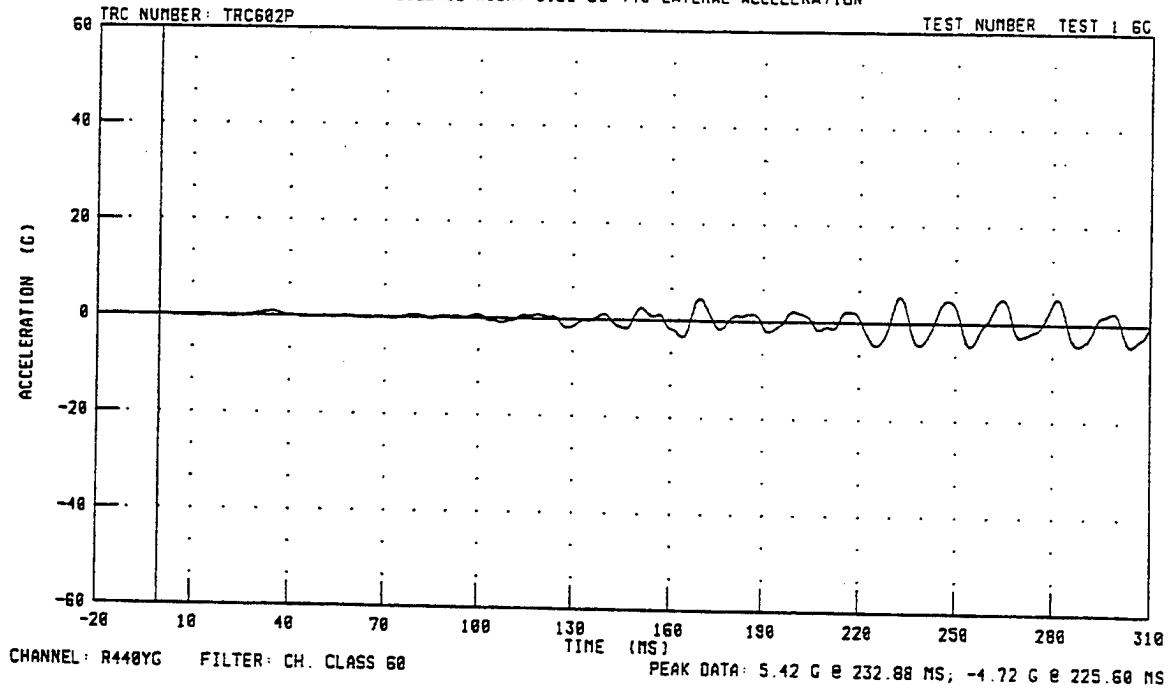
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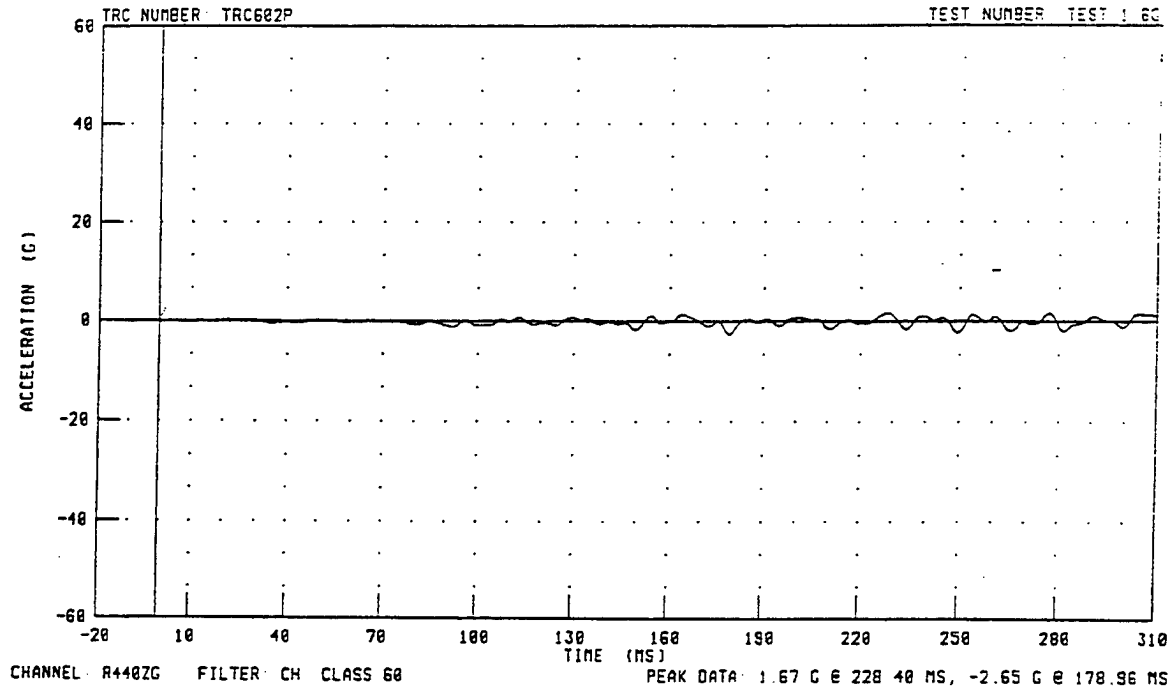
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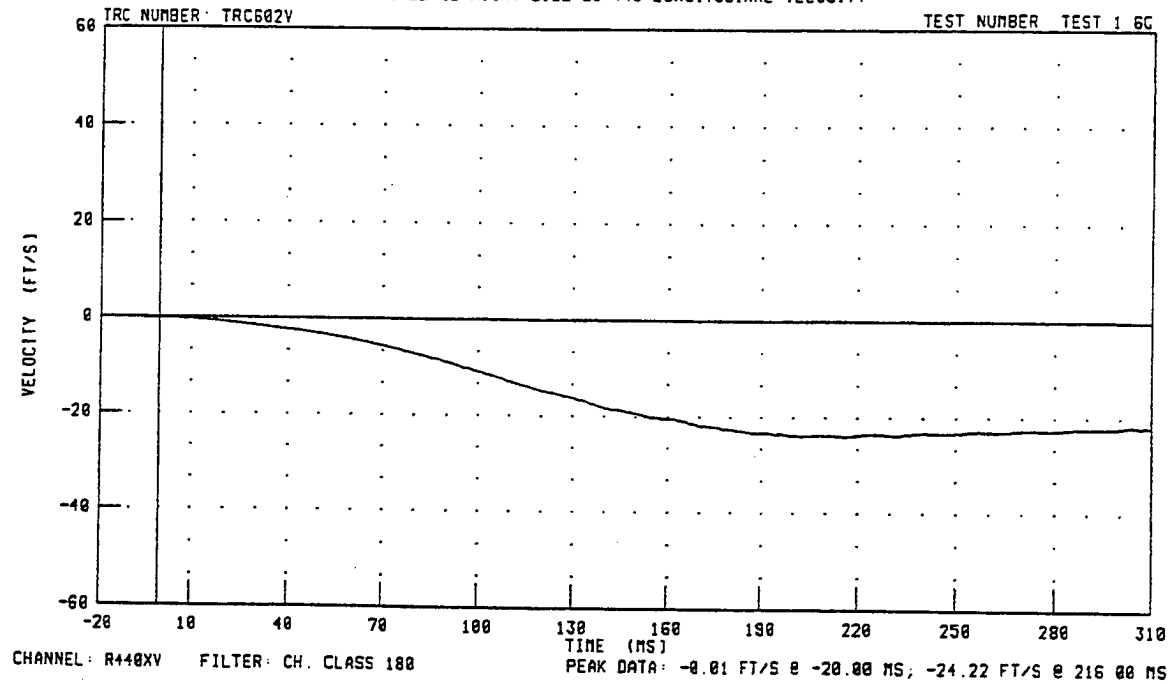
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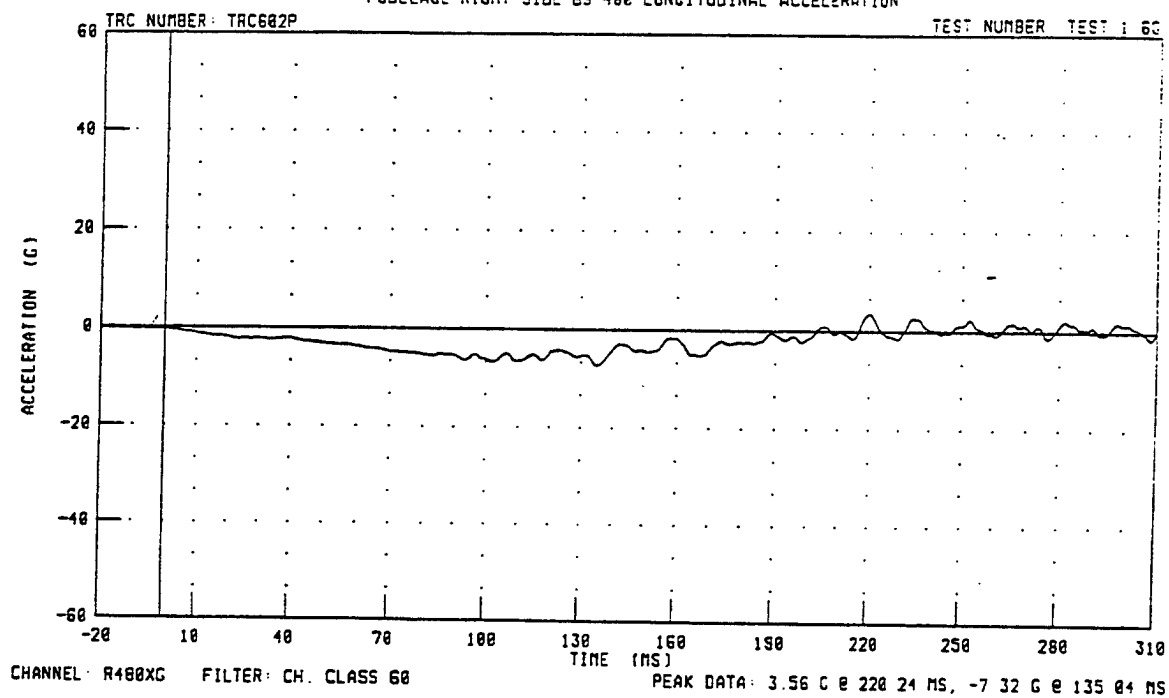
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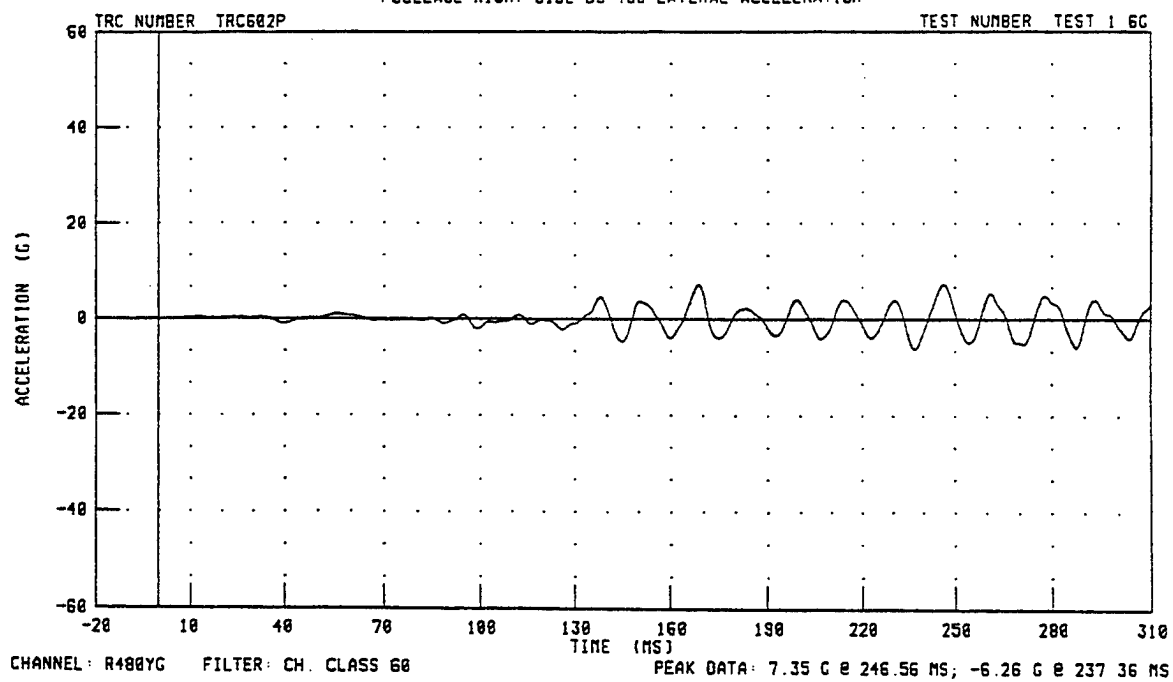
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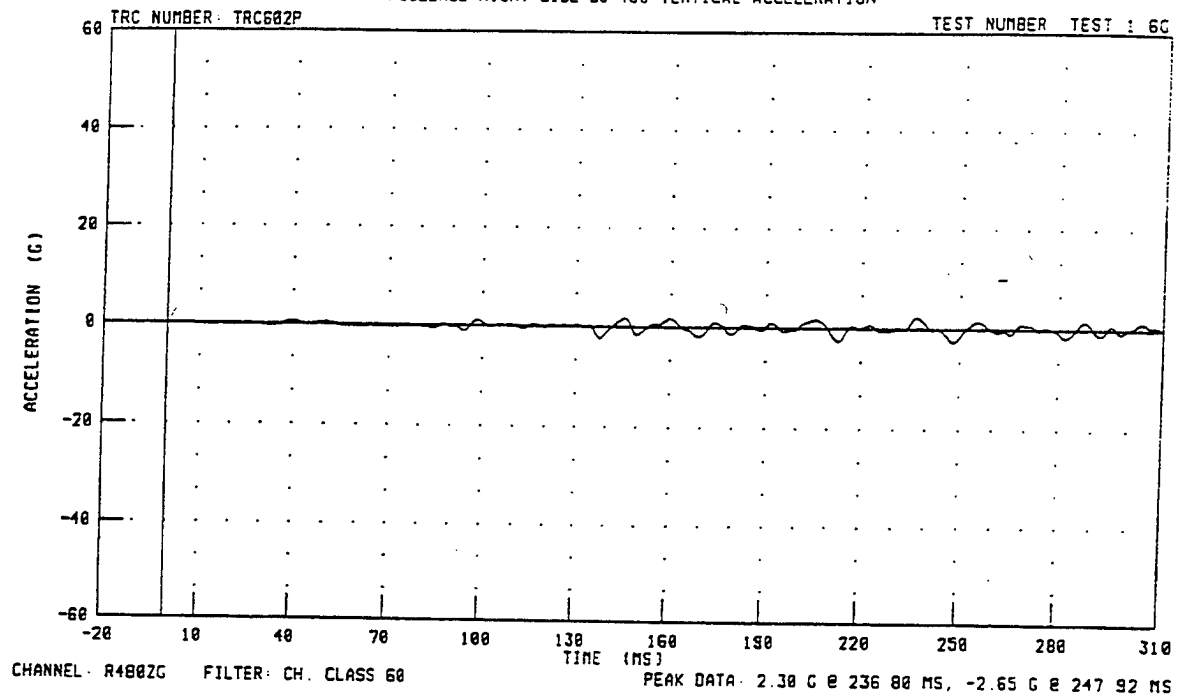
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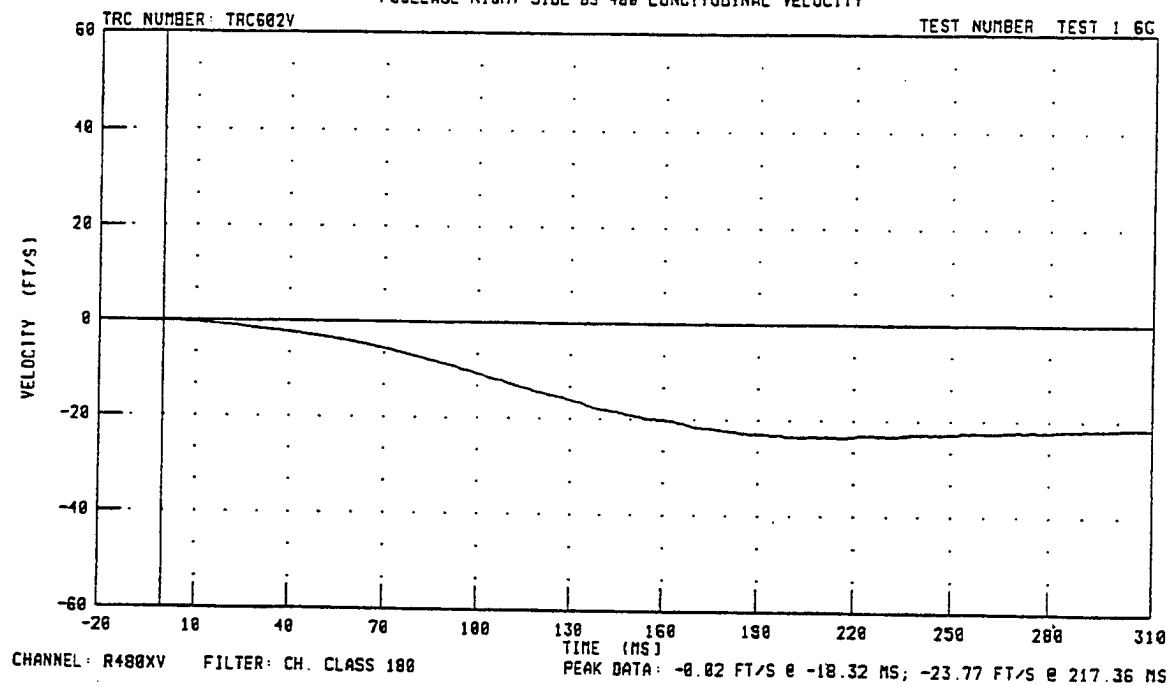
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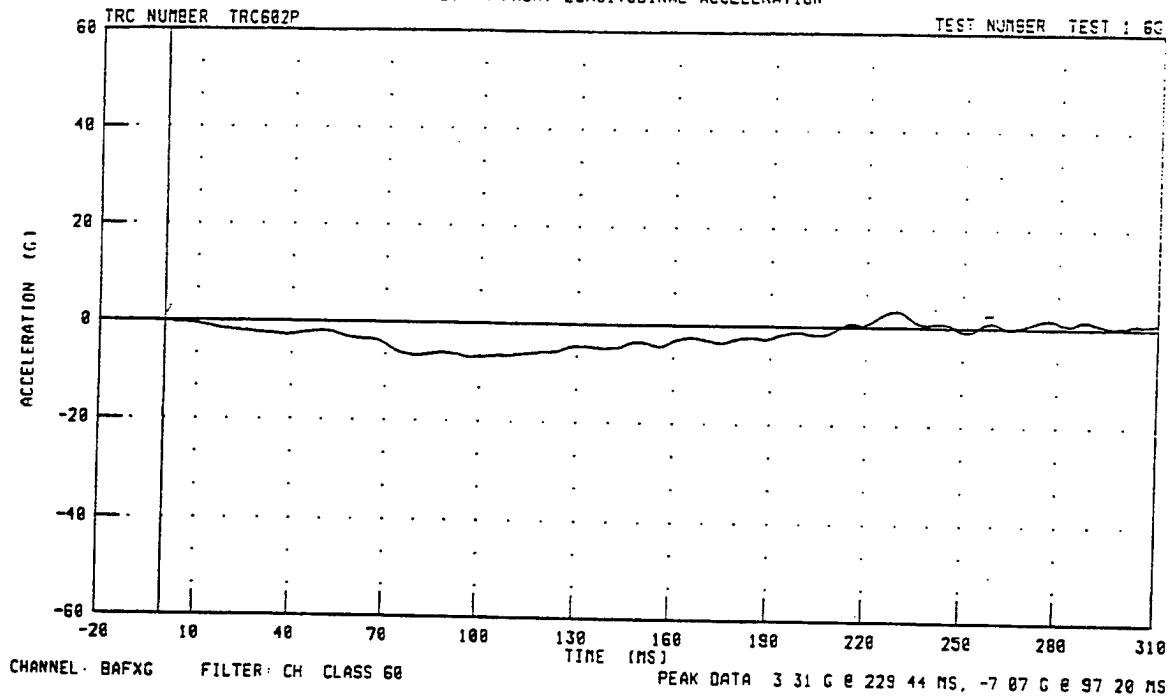
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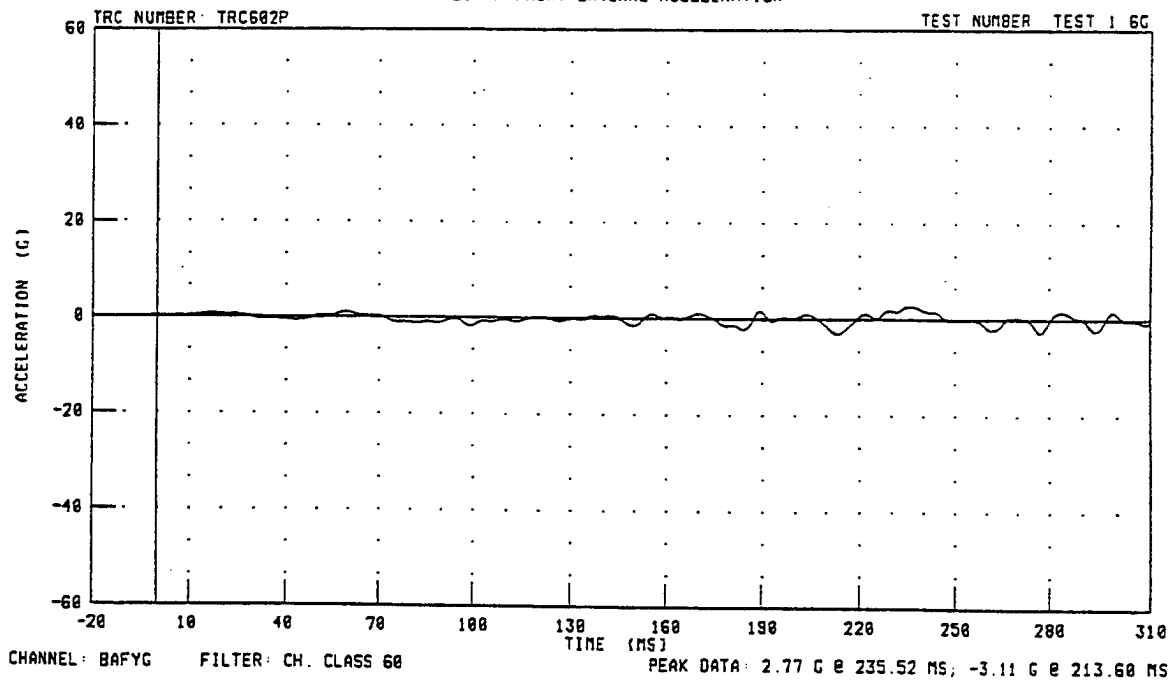
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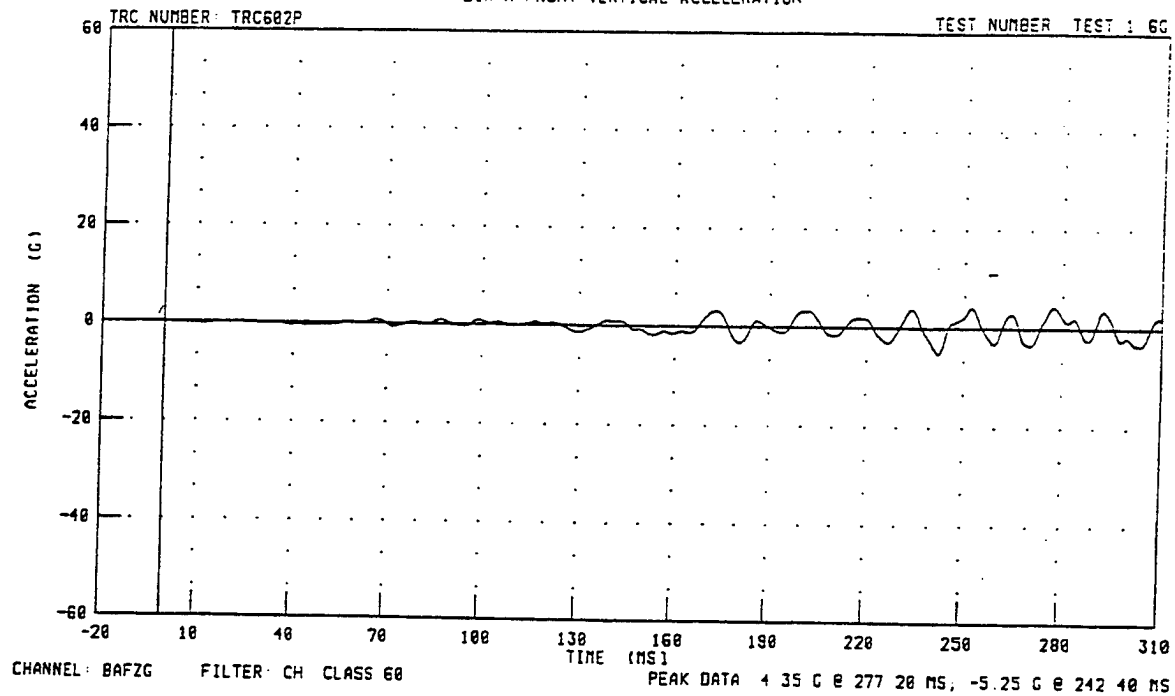
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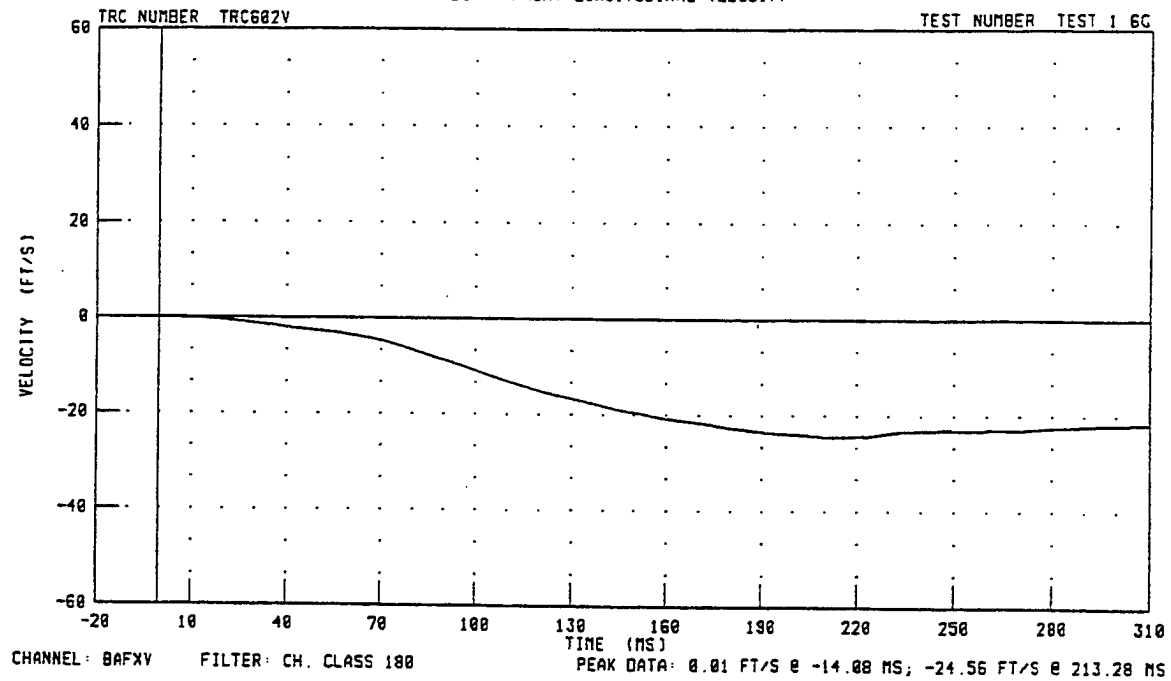
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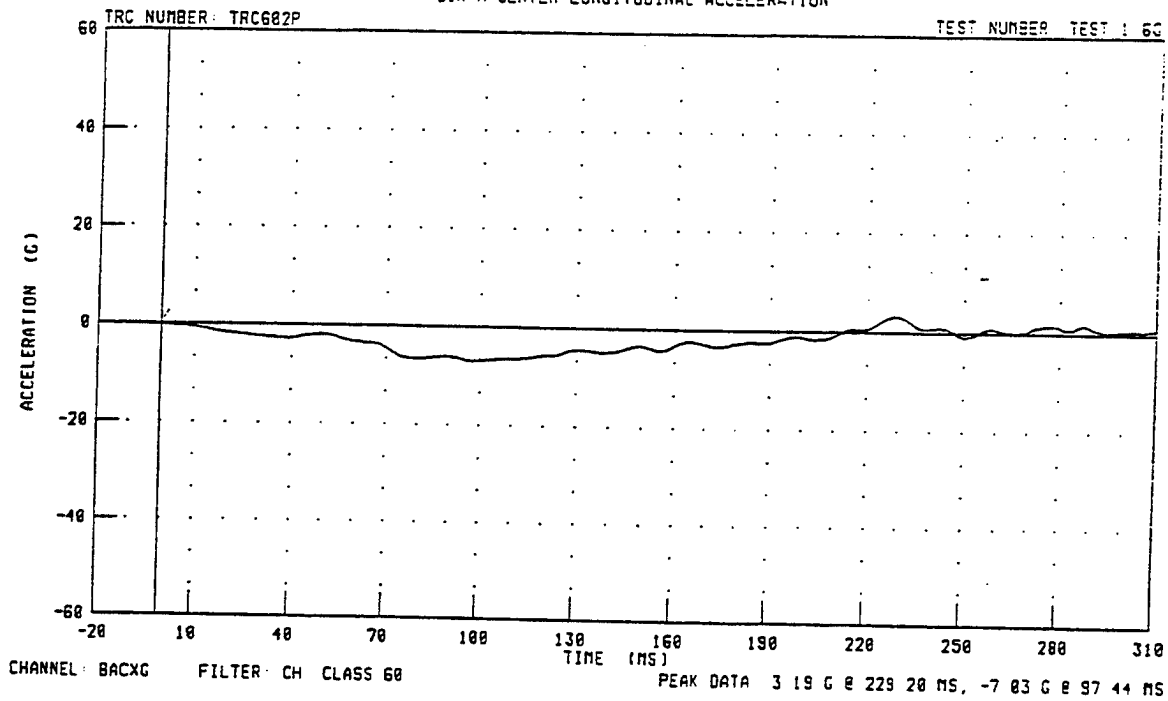
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BIN A FRONT VERTICAL ACCELERATION



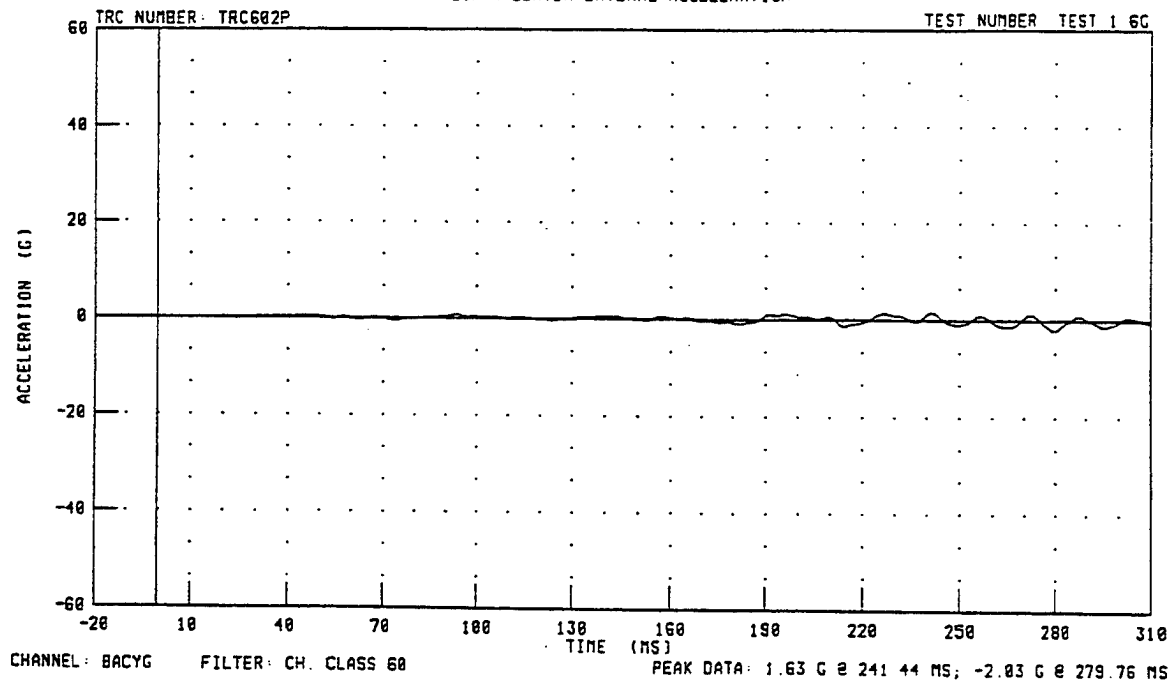
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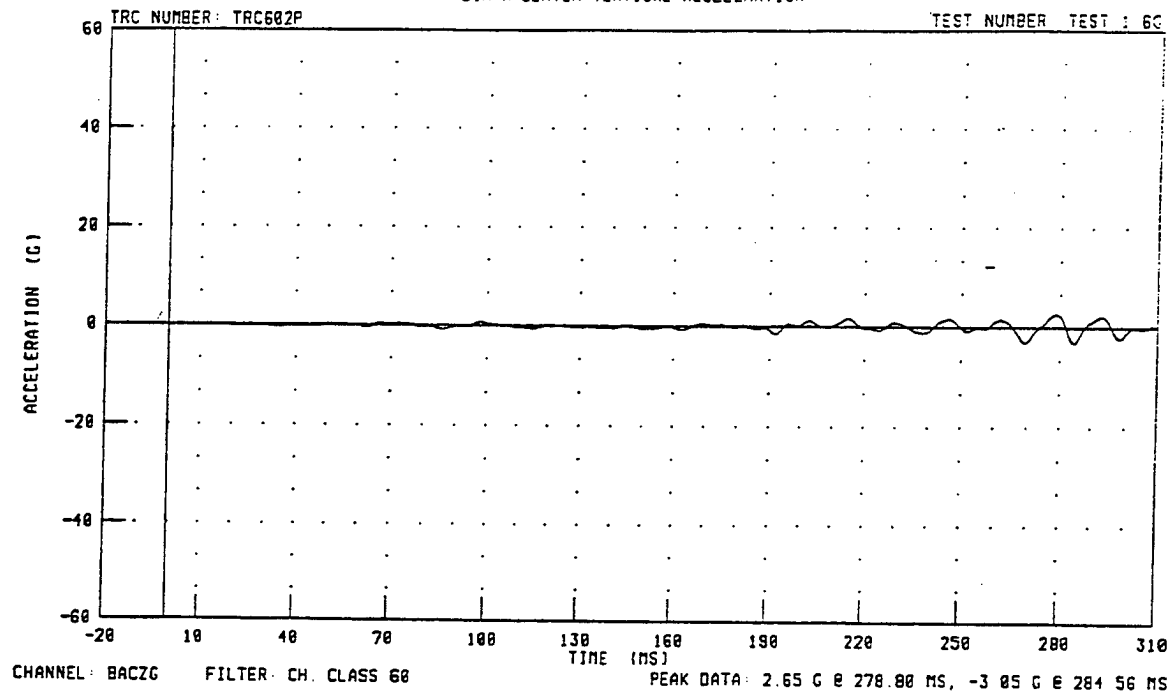
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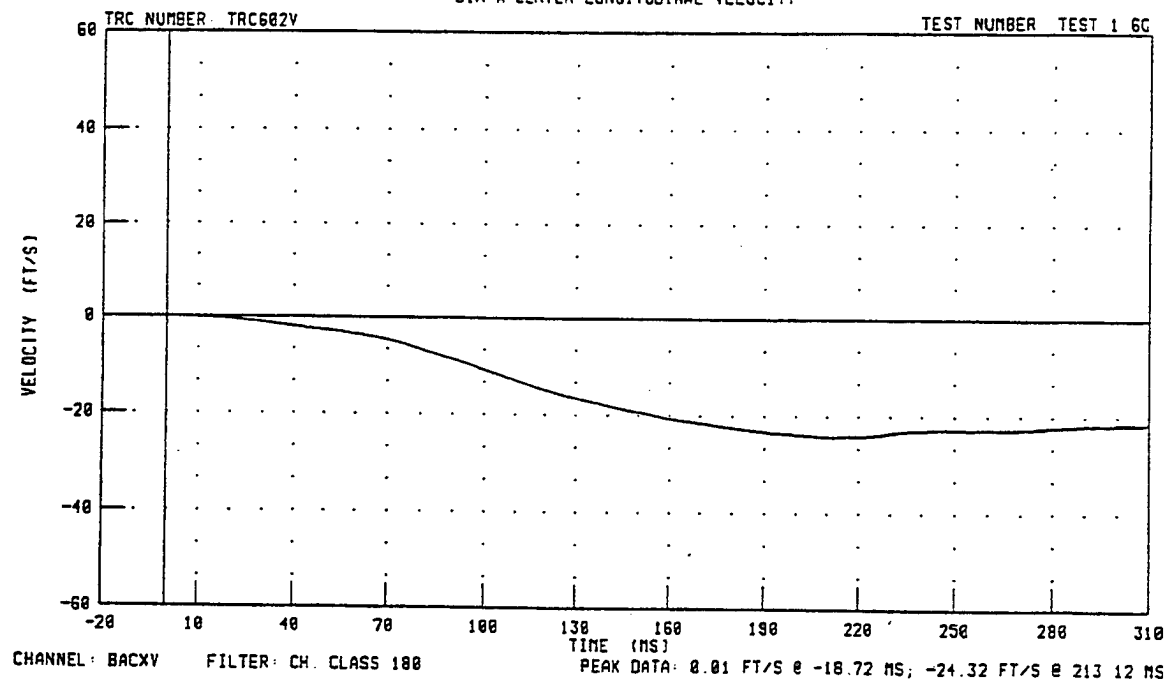
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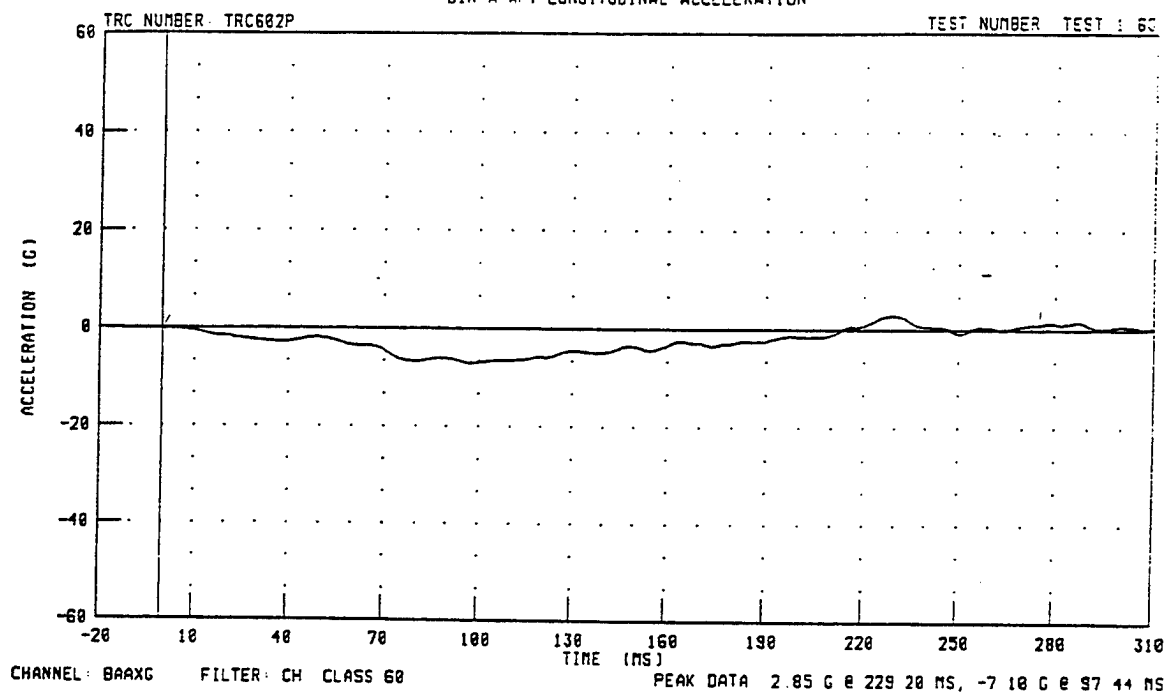
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BIN A CENTER VERTICAL ACCELERATION



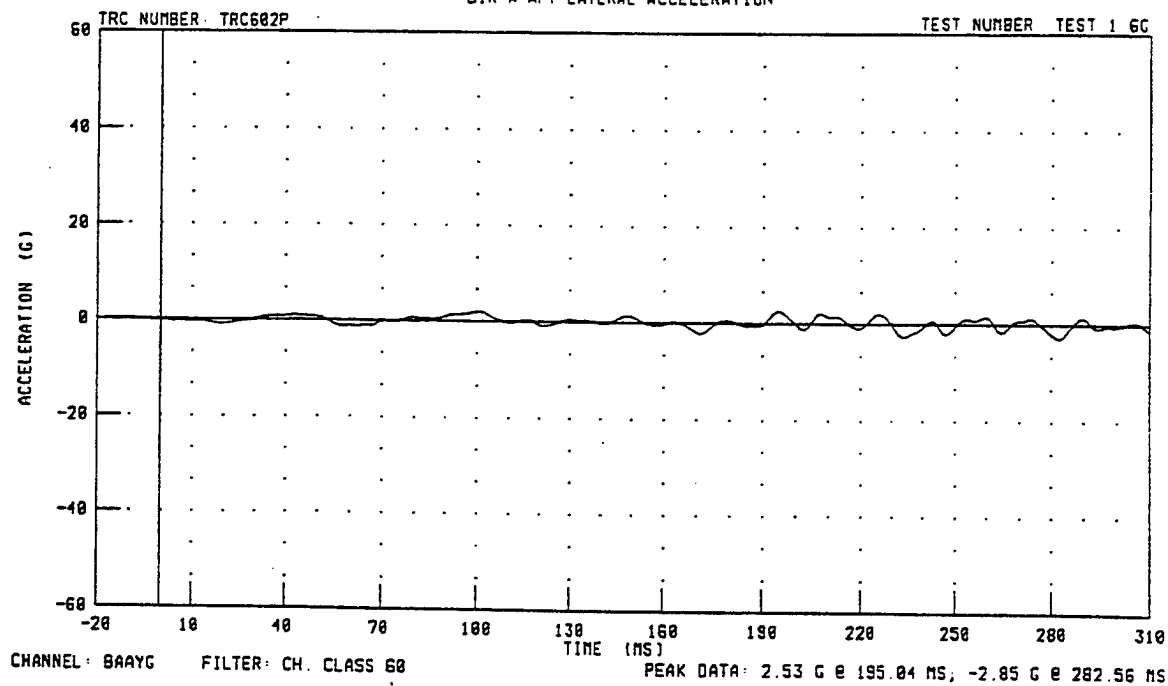
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BIN A CENTER LONGITUDINAL VELOCITY



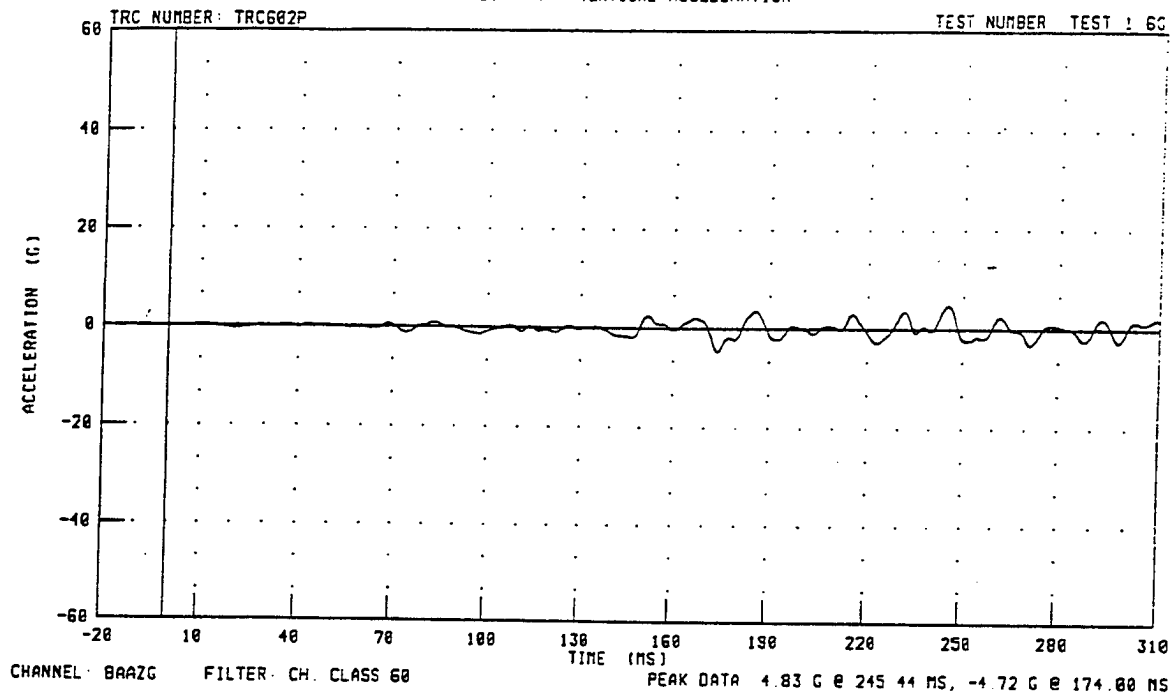
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BIN A AFT LONGITUDINAL ACCELERATION



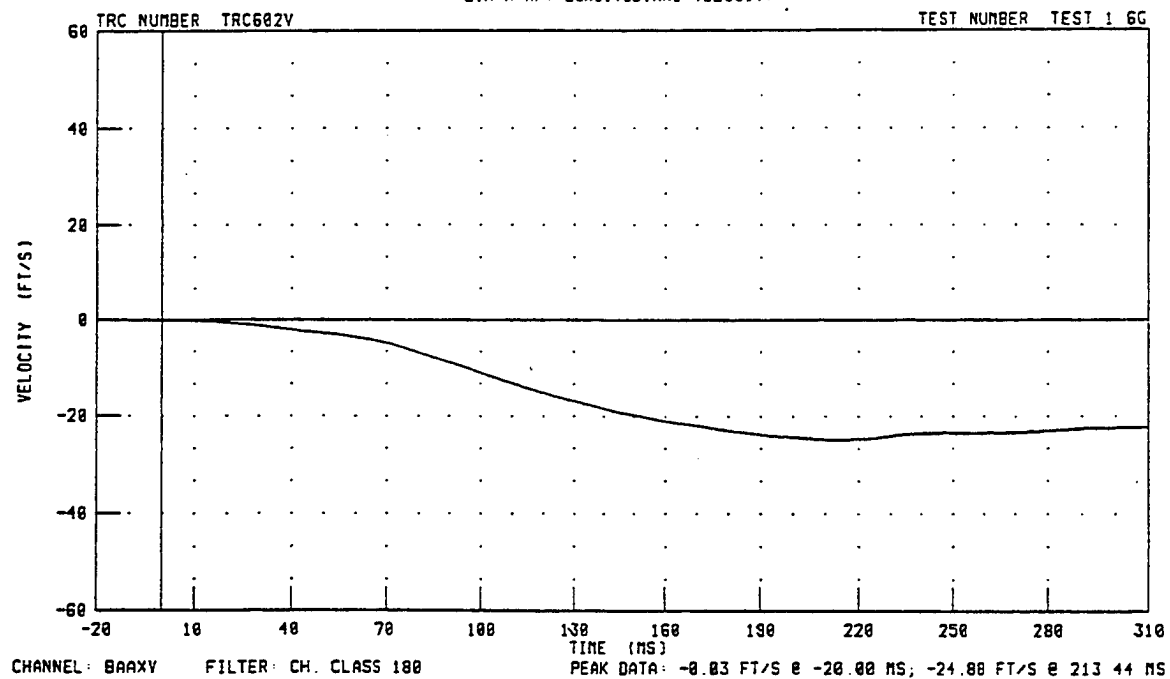
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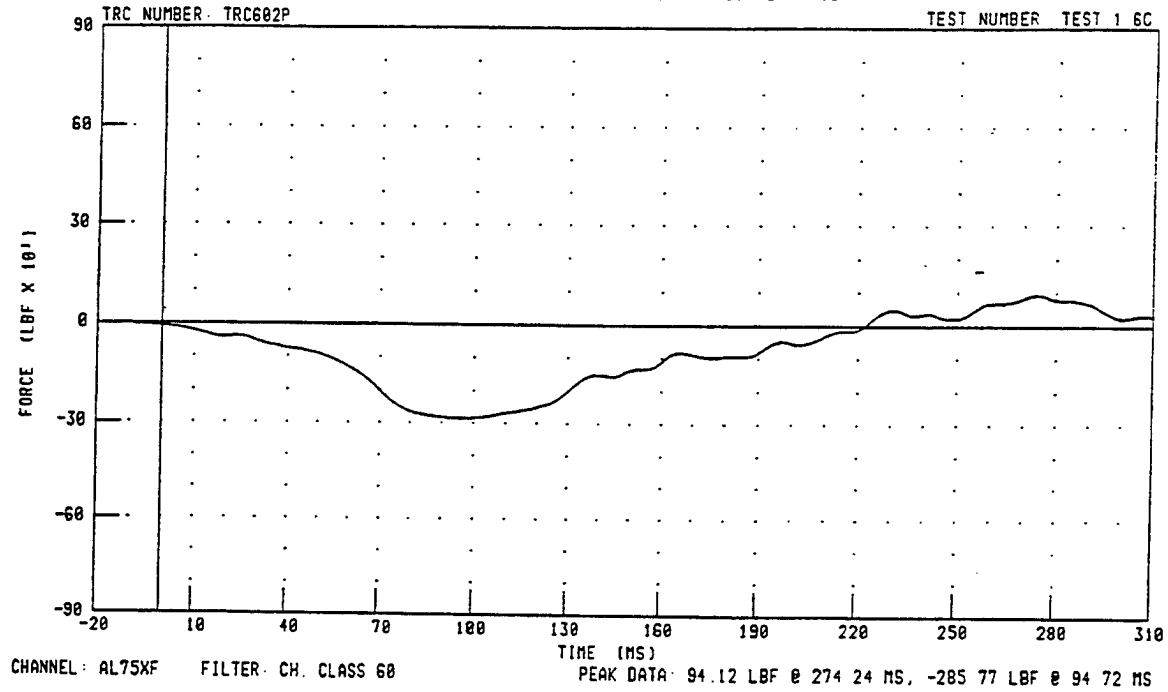
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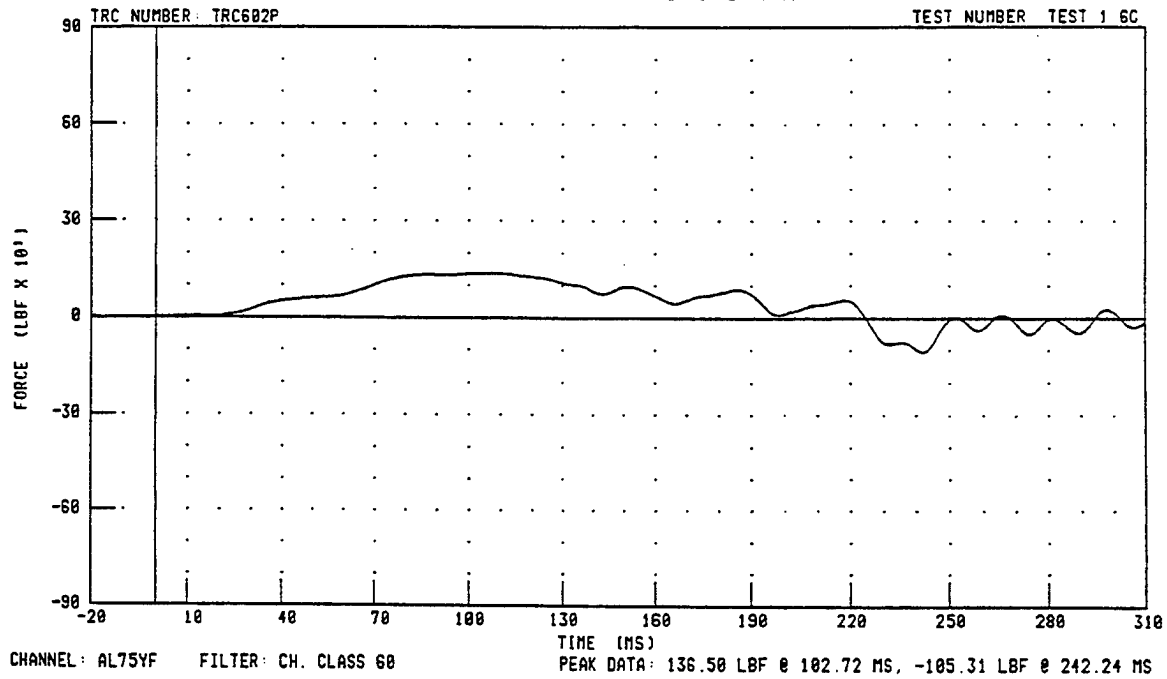
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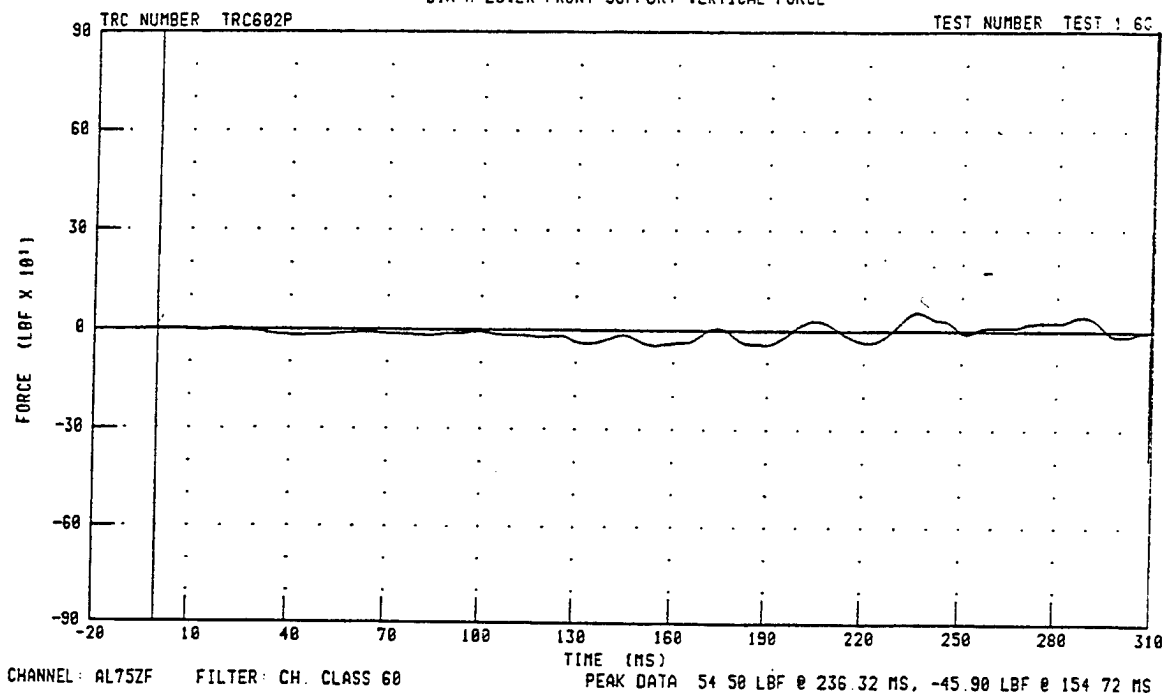
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BIN A LOWER FRONT SUPPORT LONGITUDINAL FORCE



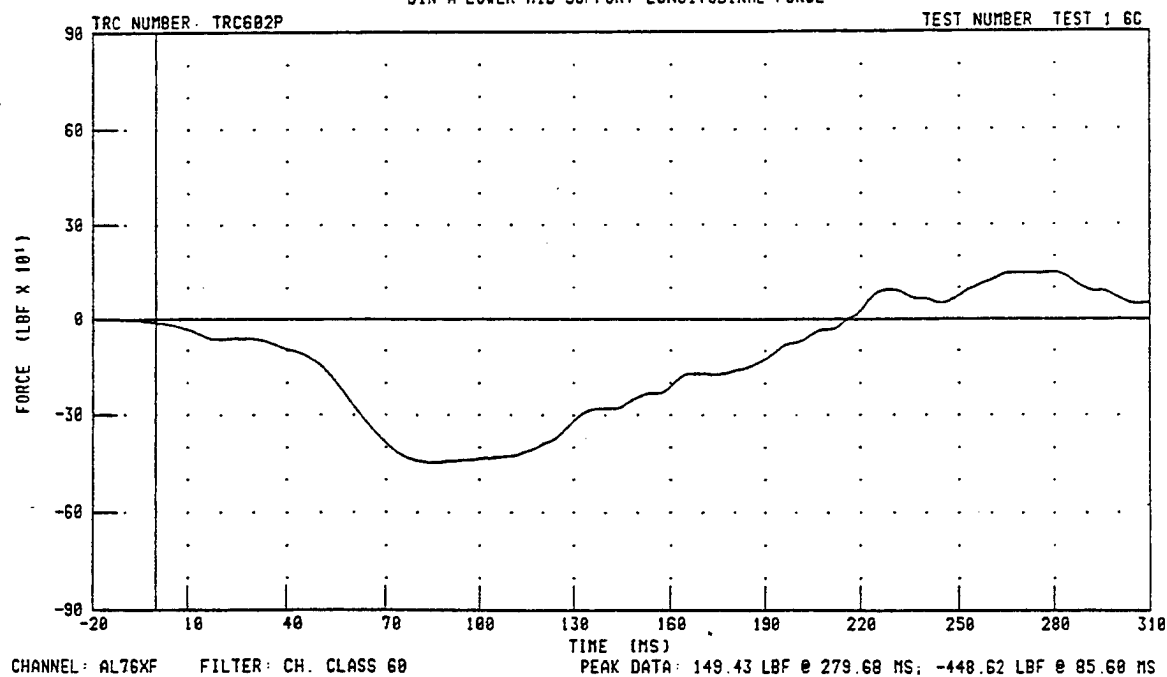
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BIN A LOWER FRONT SUPPORT LATERAL FORCE



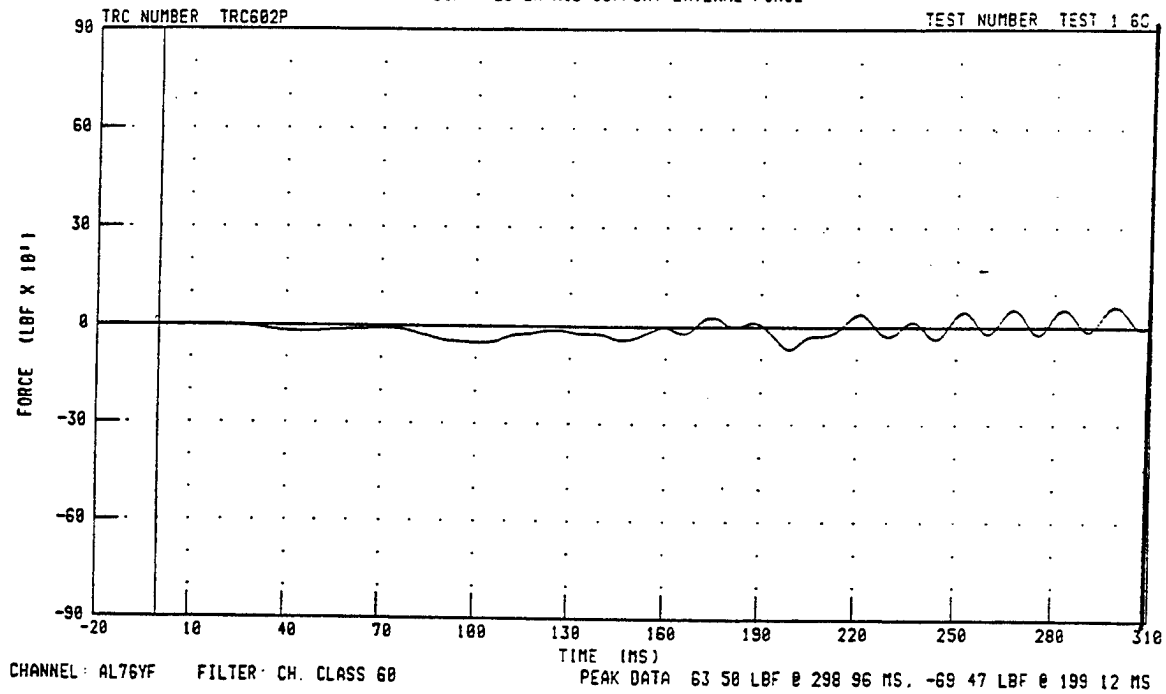
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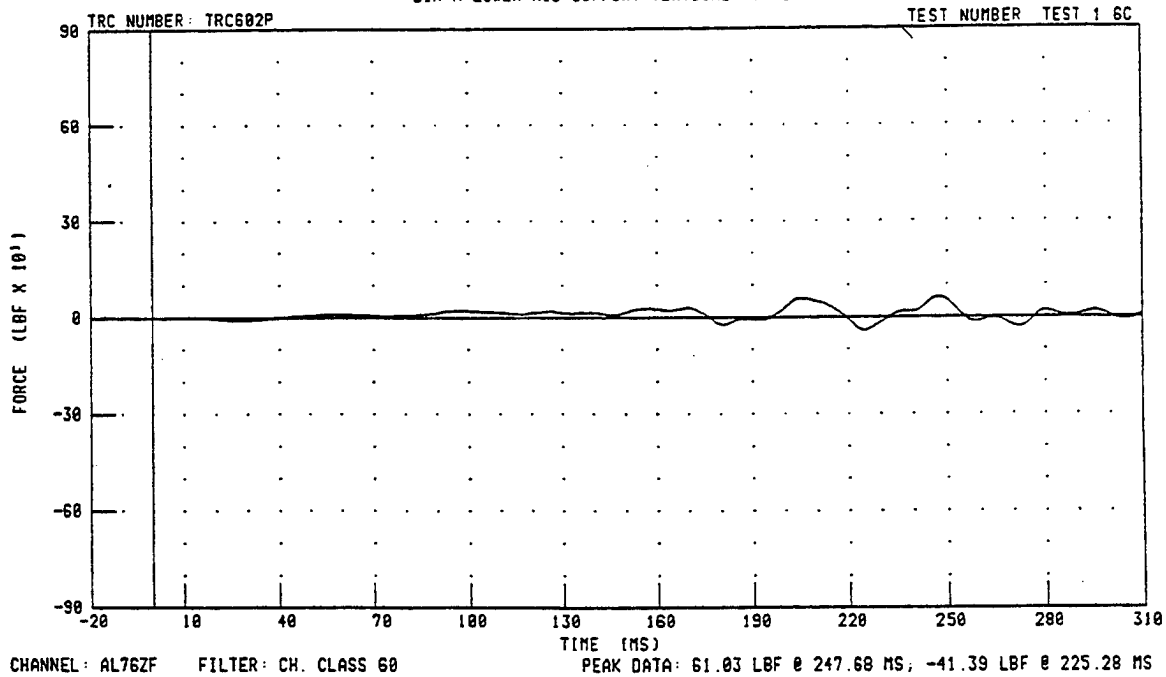
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BIN A LOWER MID SUPPORT LONGITUDINAL FORCE



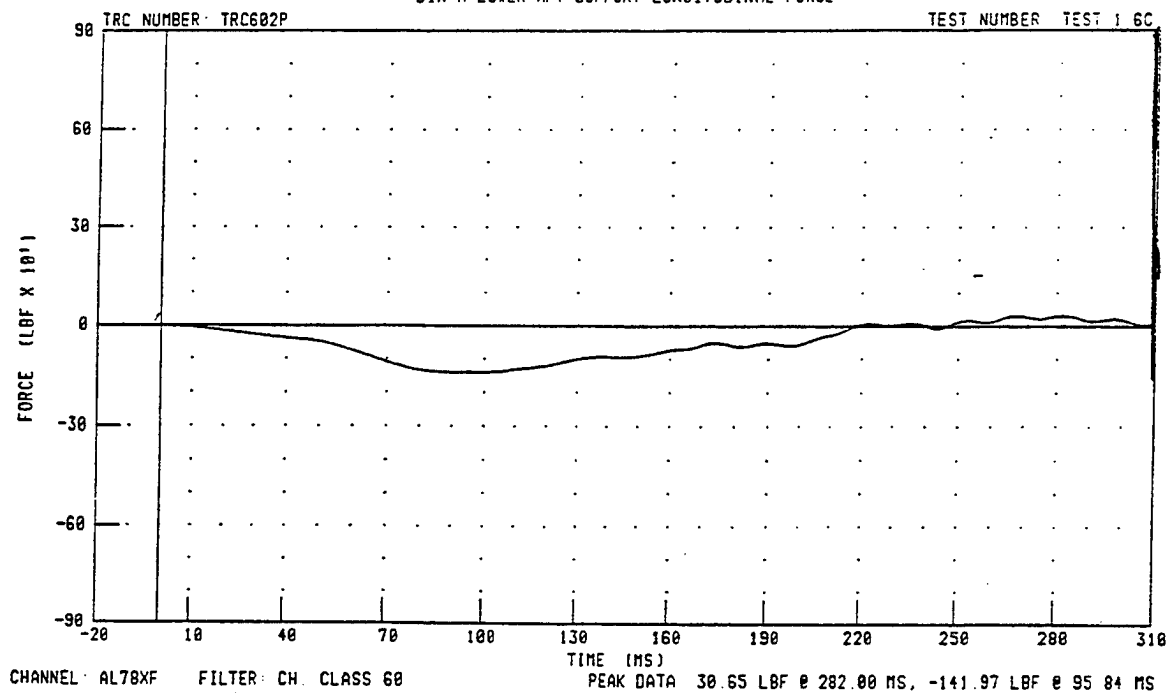
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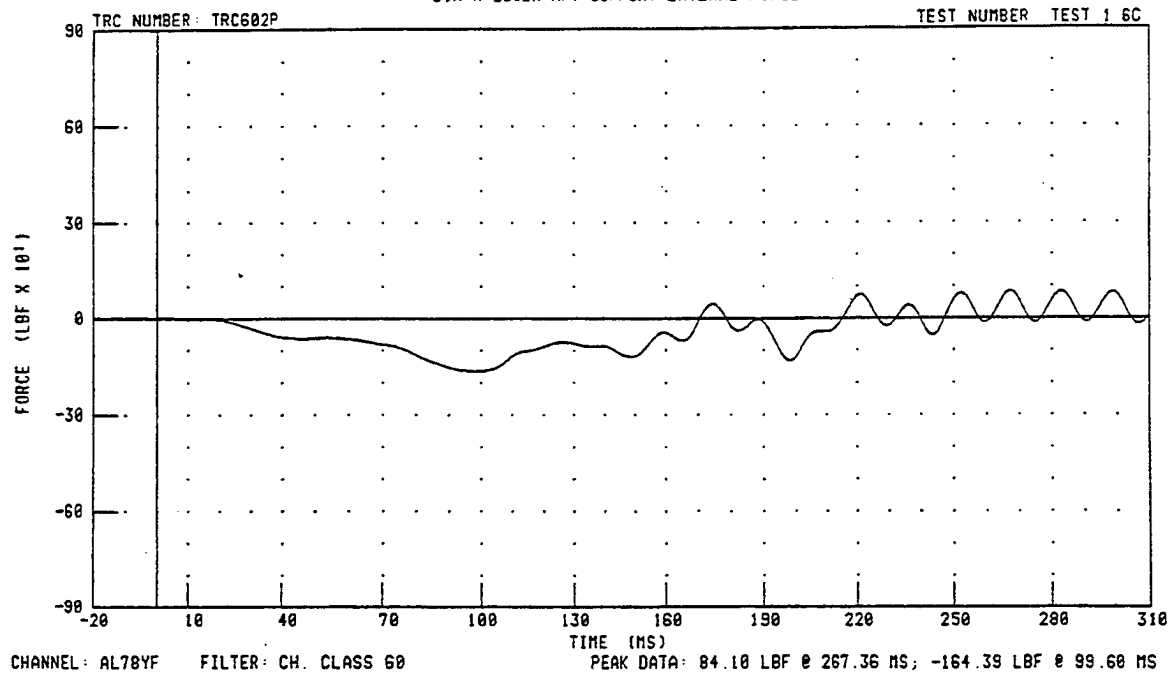
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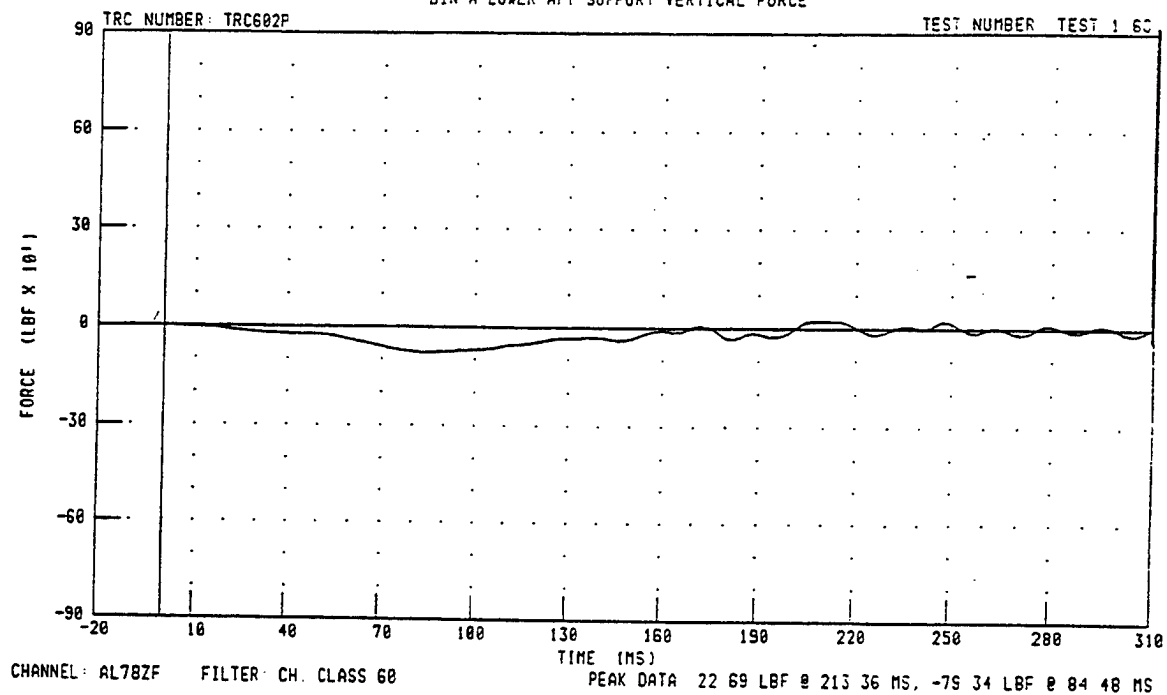
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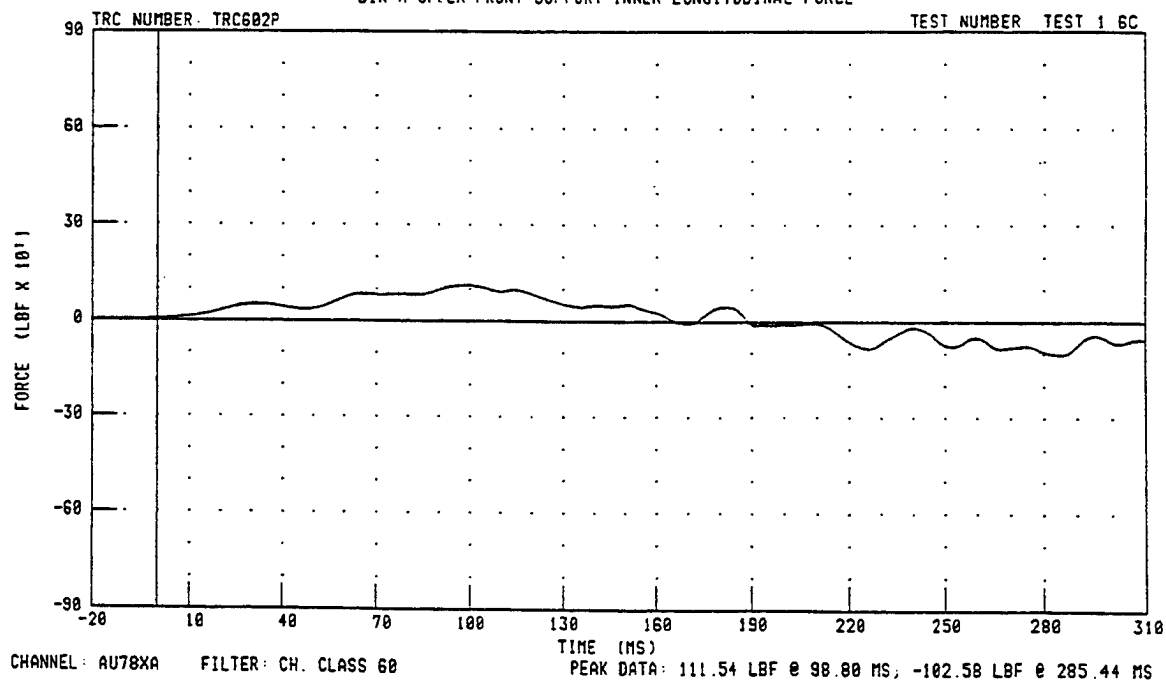
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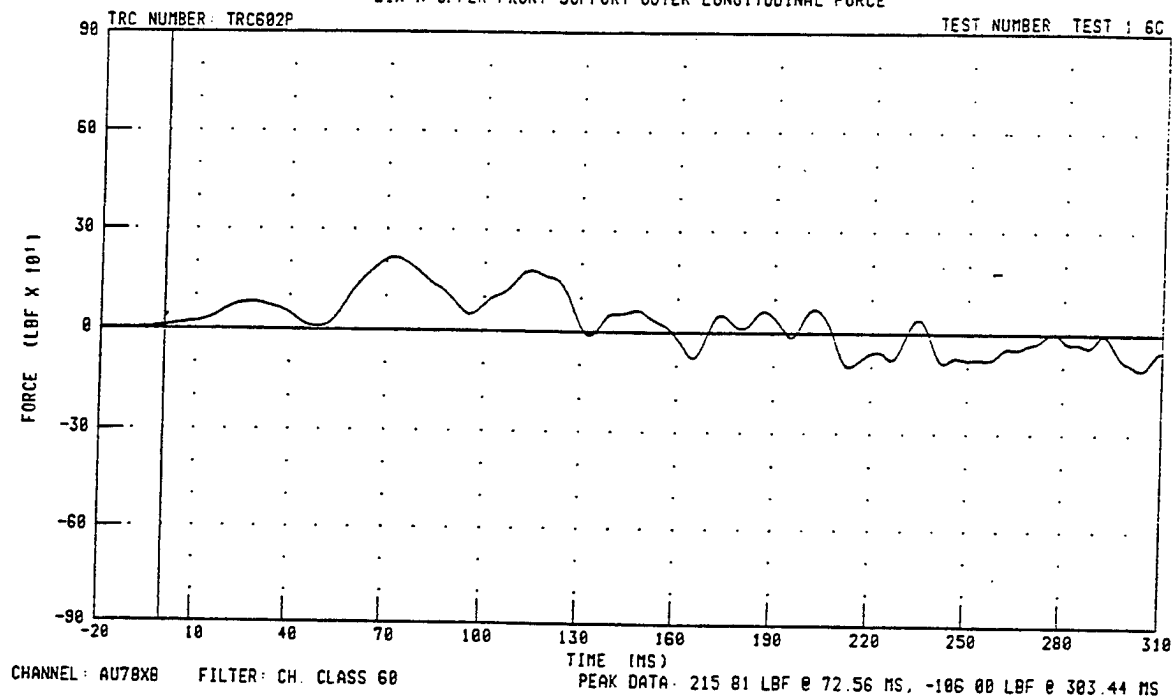
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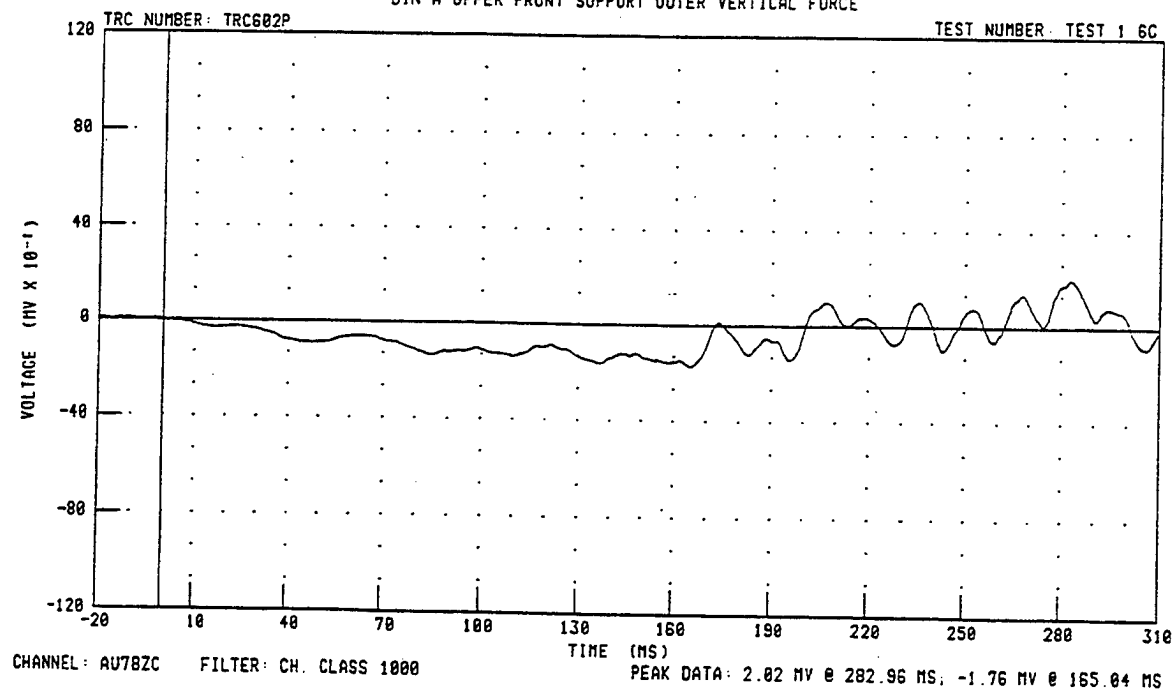
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BIN A UPPER FRONT SUPPORT INNER LONGITUDINAL FORCE



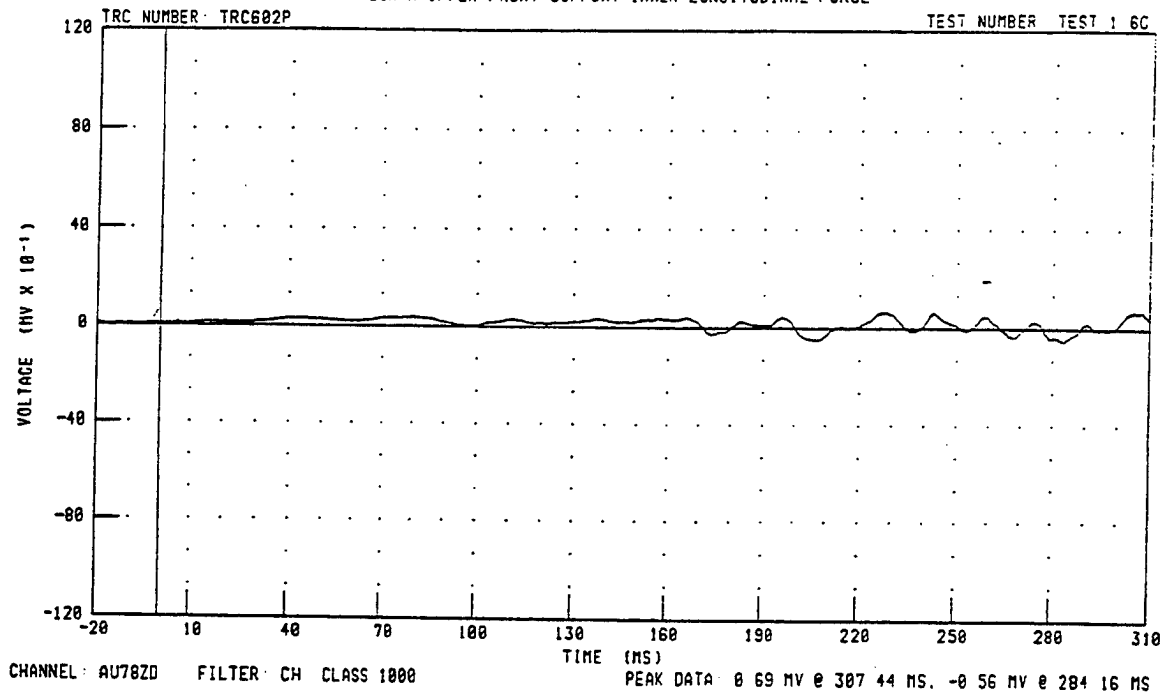
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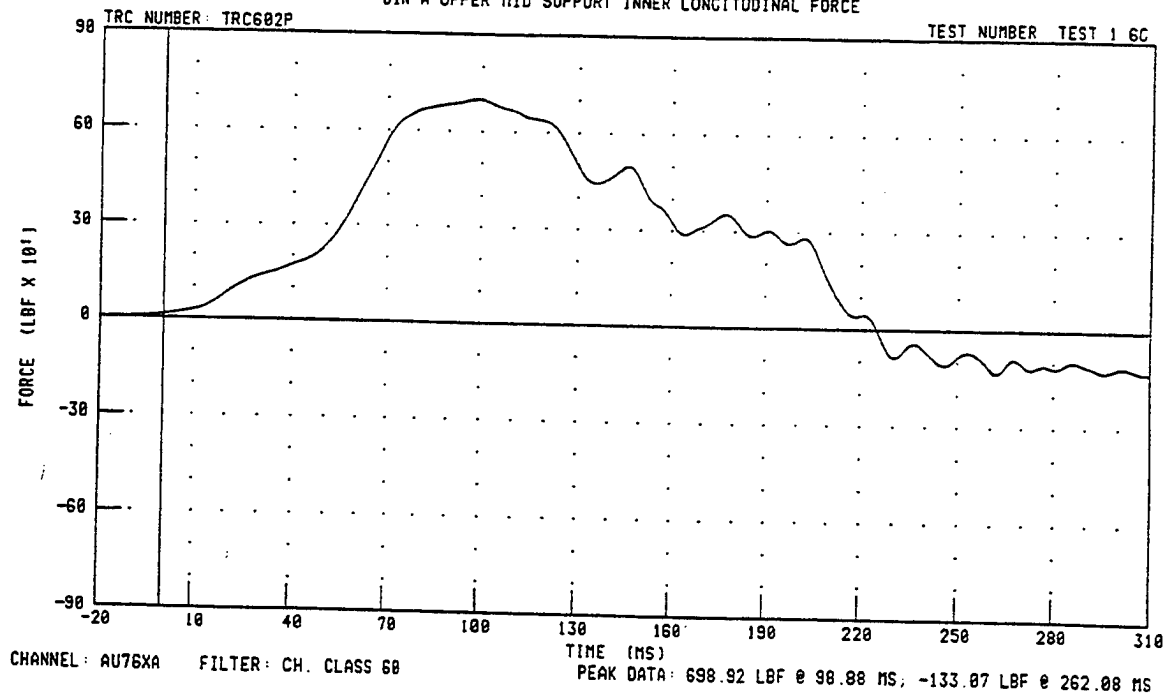
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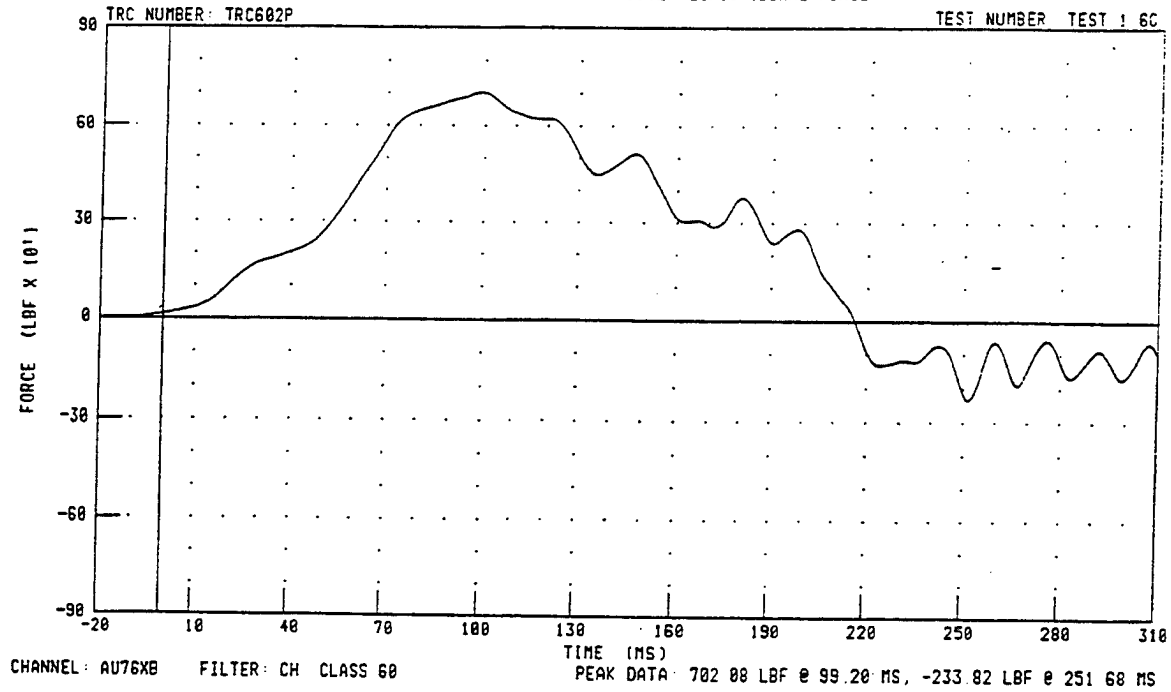
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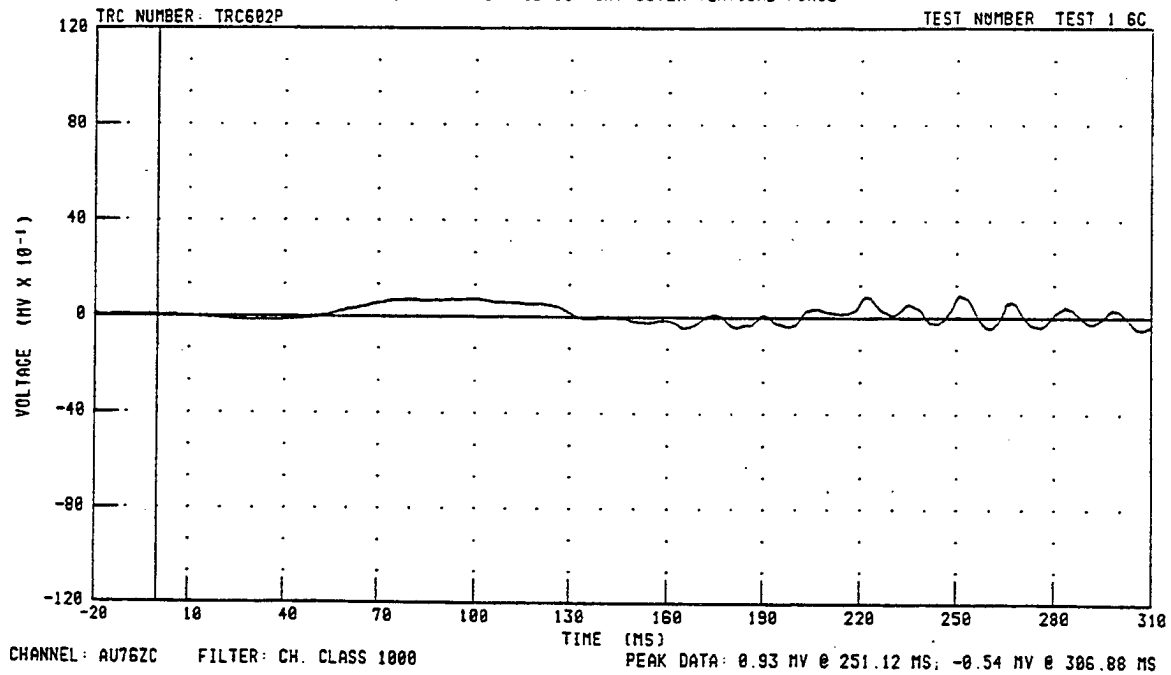
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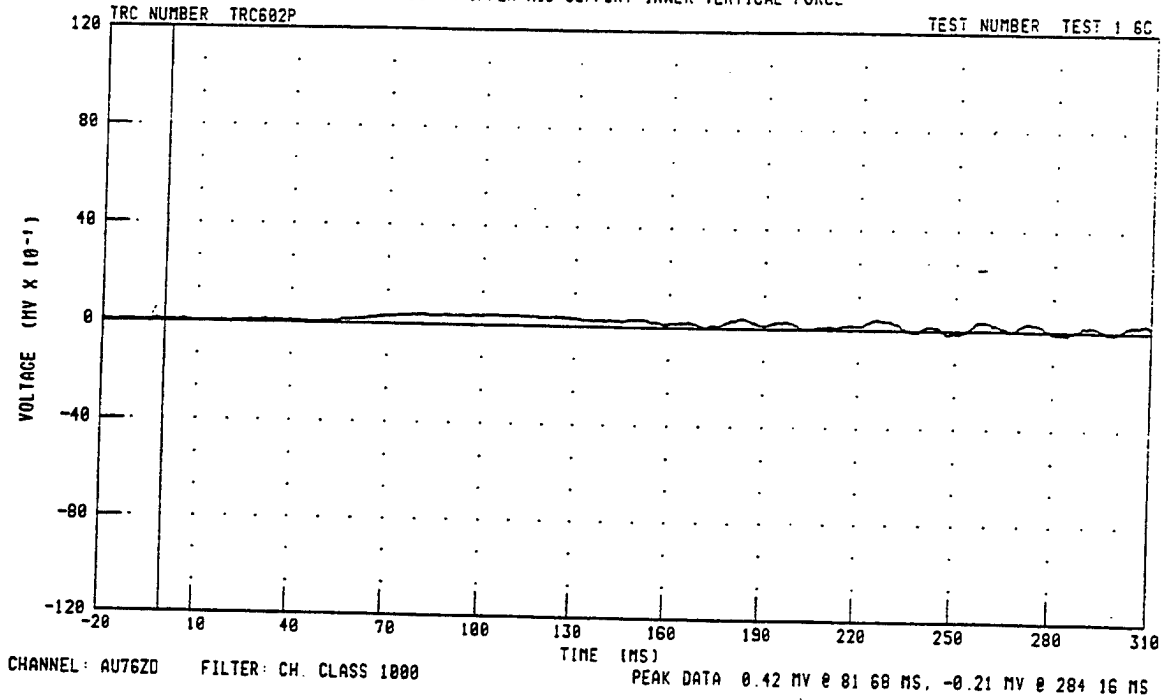
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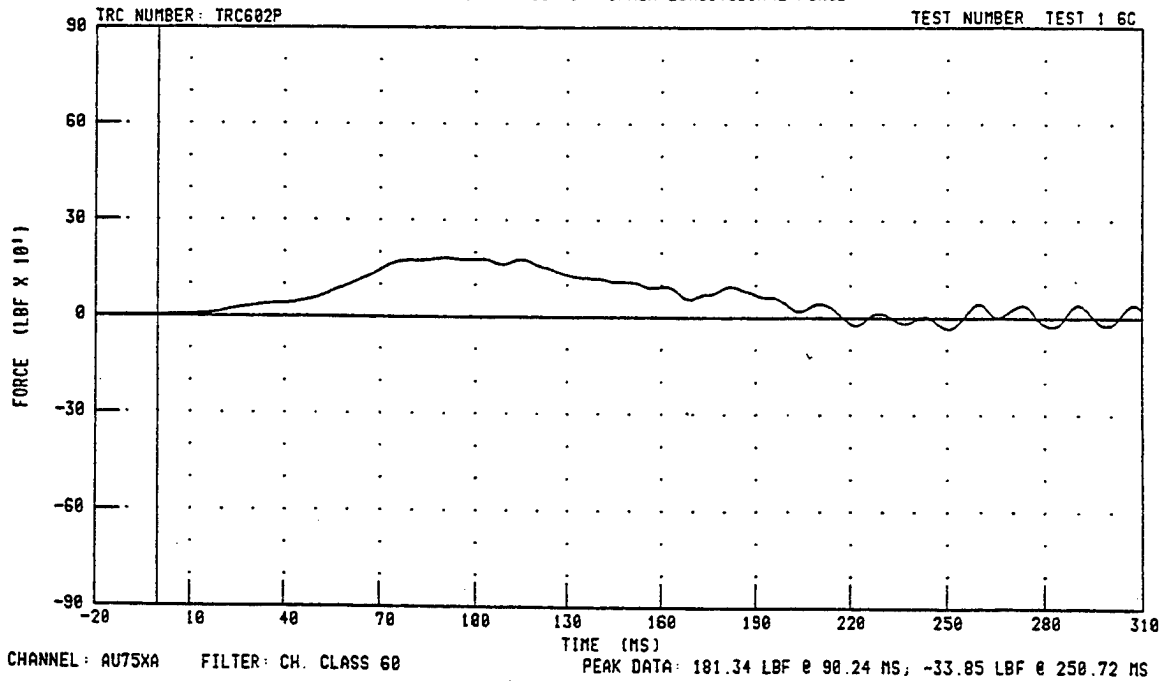
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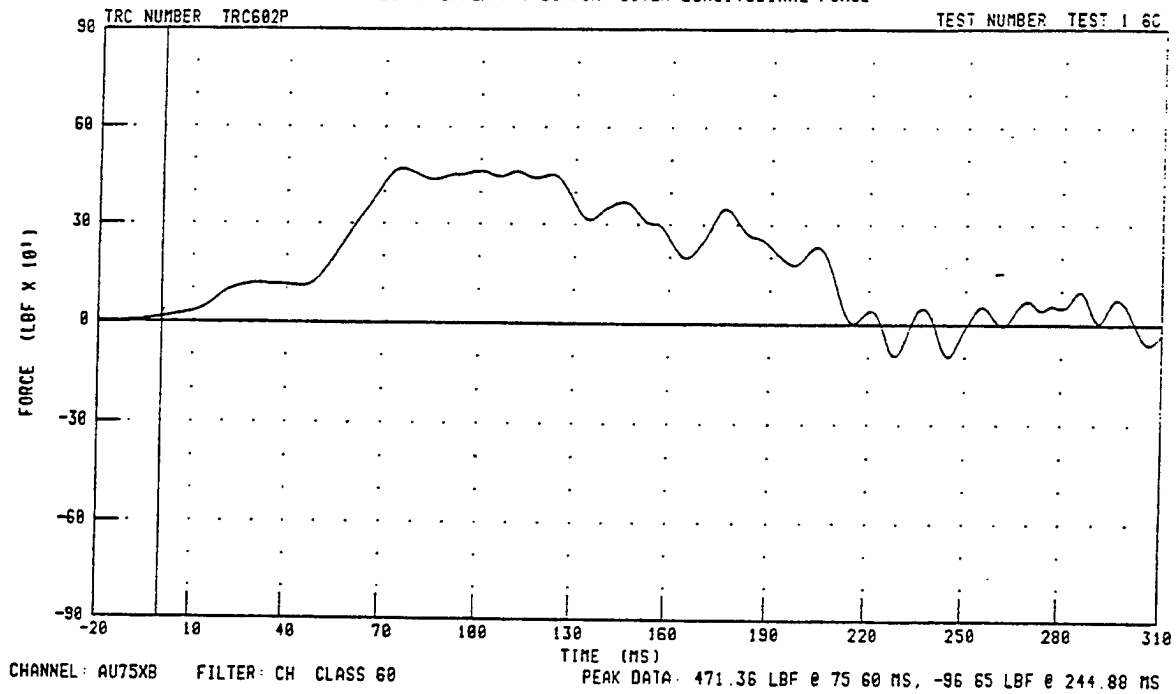
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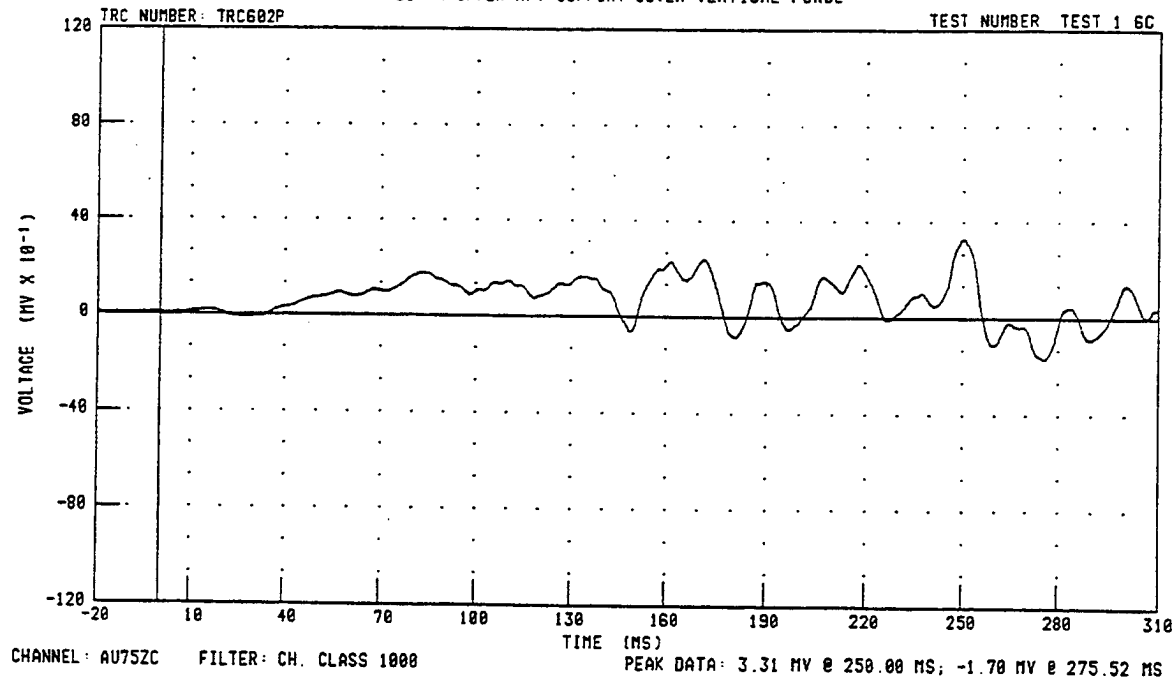
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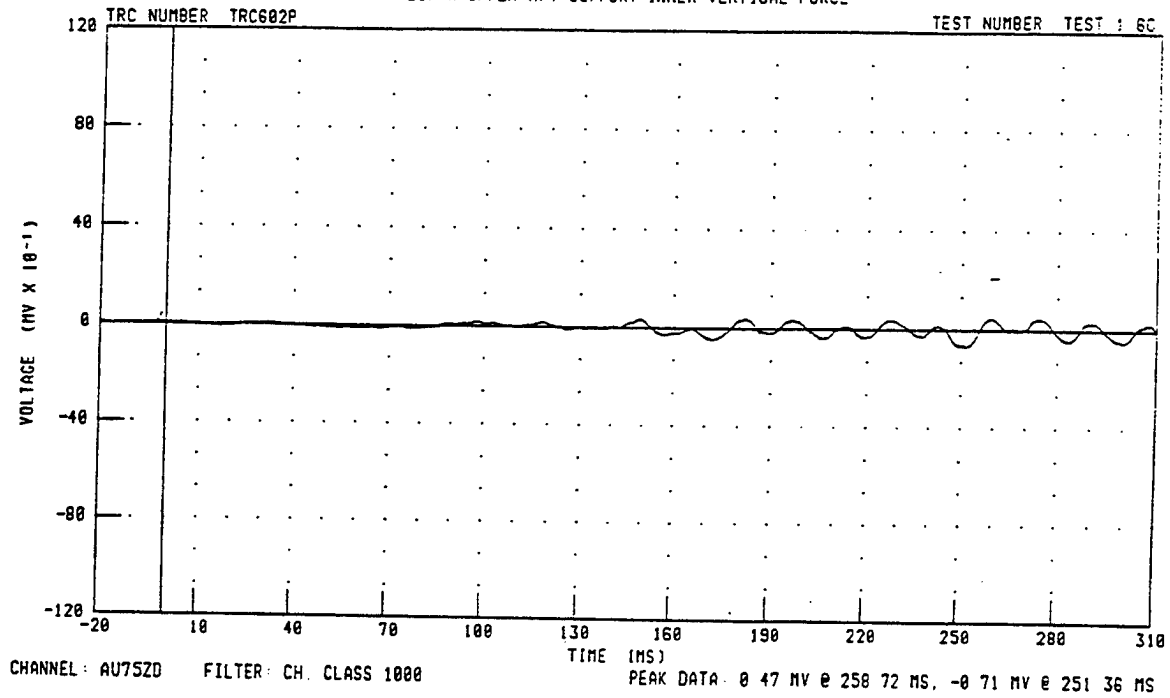
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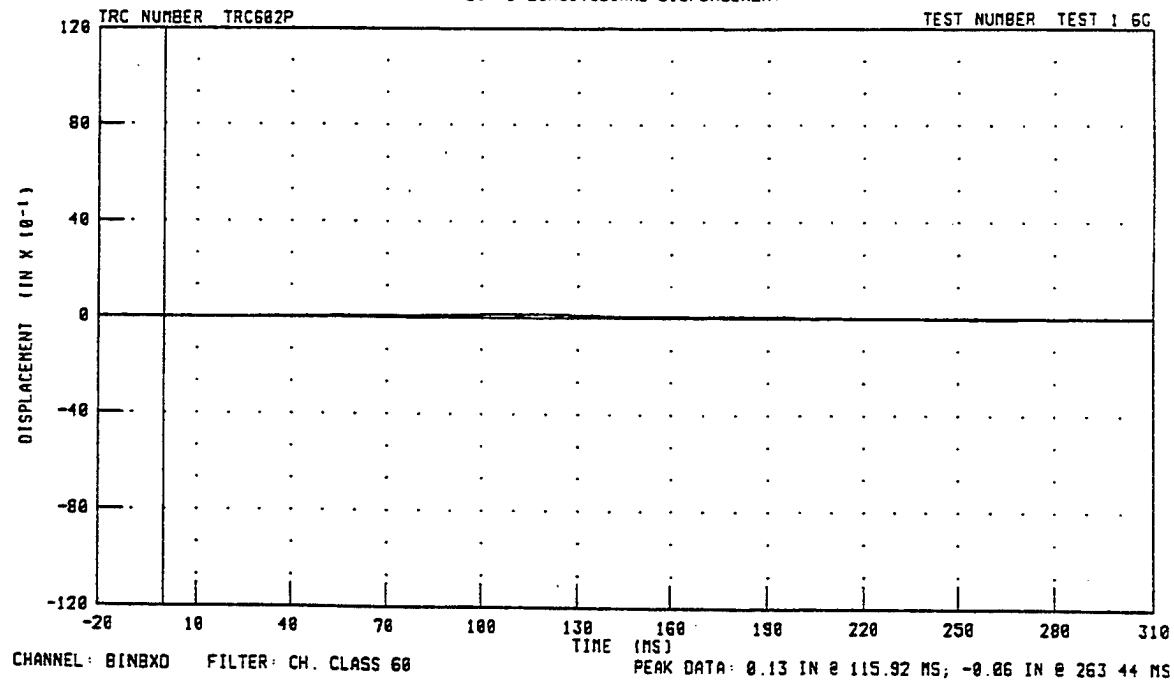
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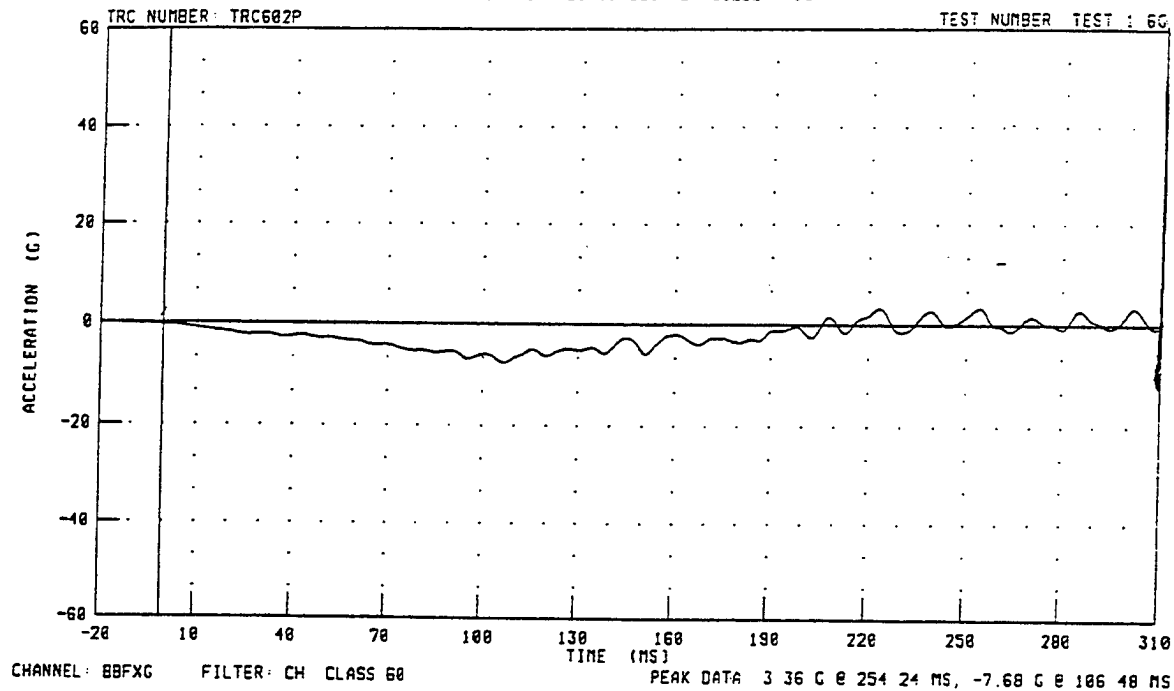
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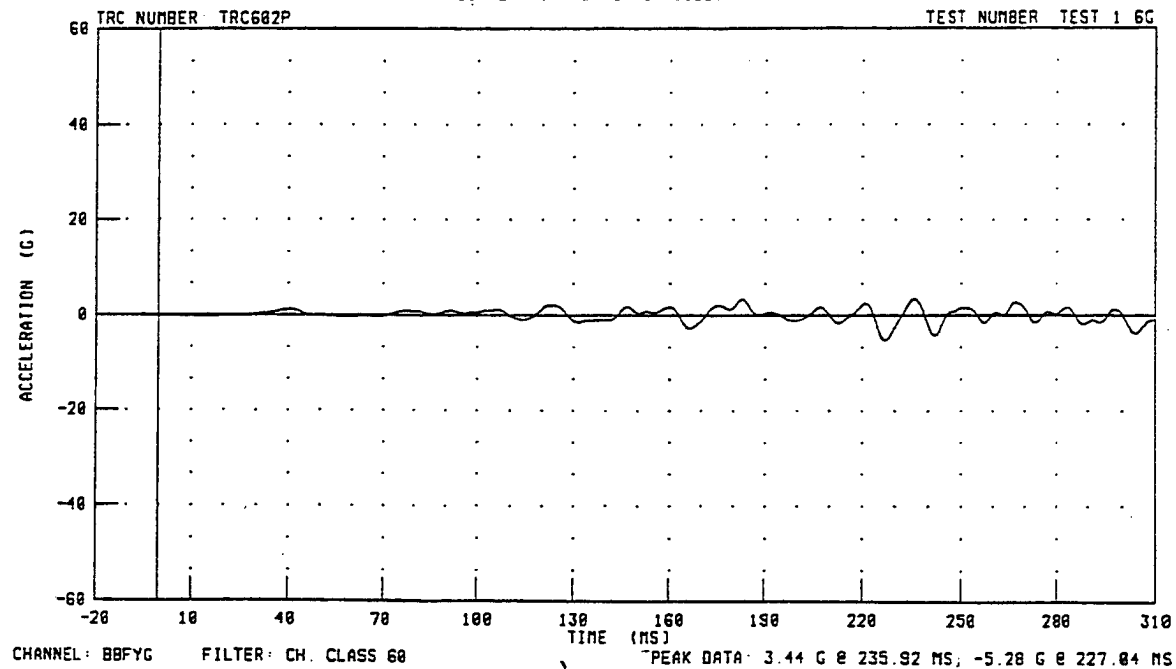
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BIN B LONGITUDINAL DISPLACEMENT



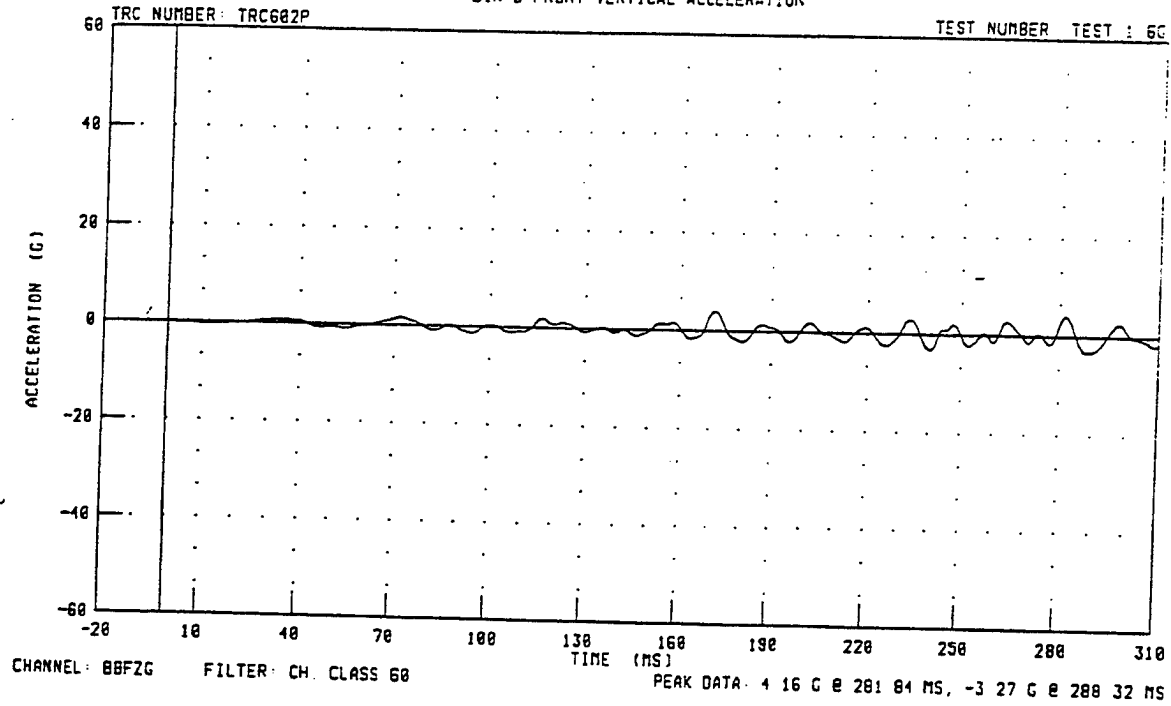
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BIN B FRONT LONGITUDINAL ACCELERATION



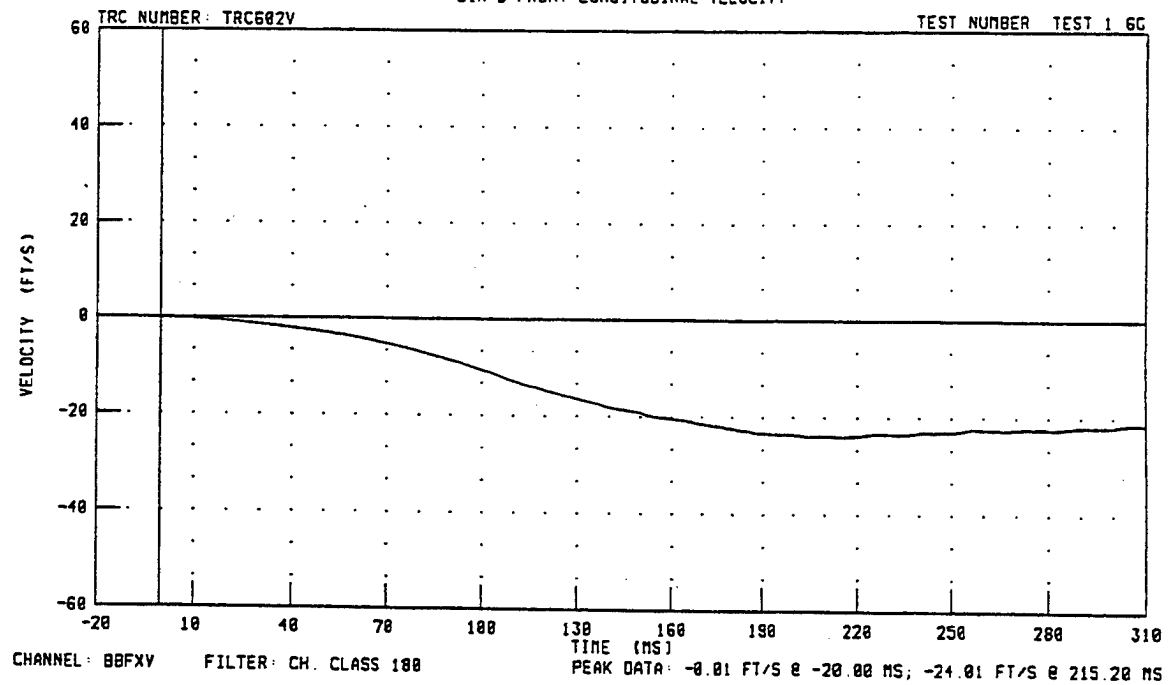
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BIN B FRONT LATERAL ACCELERATION



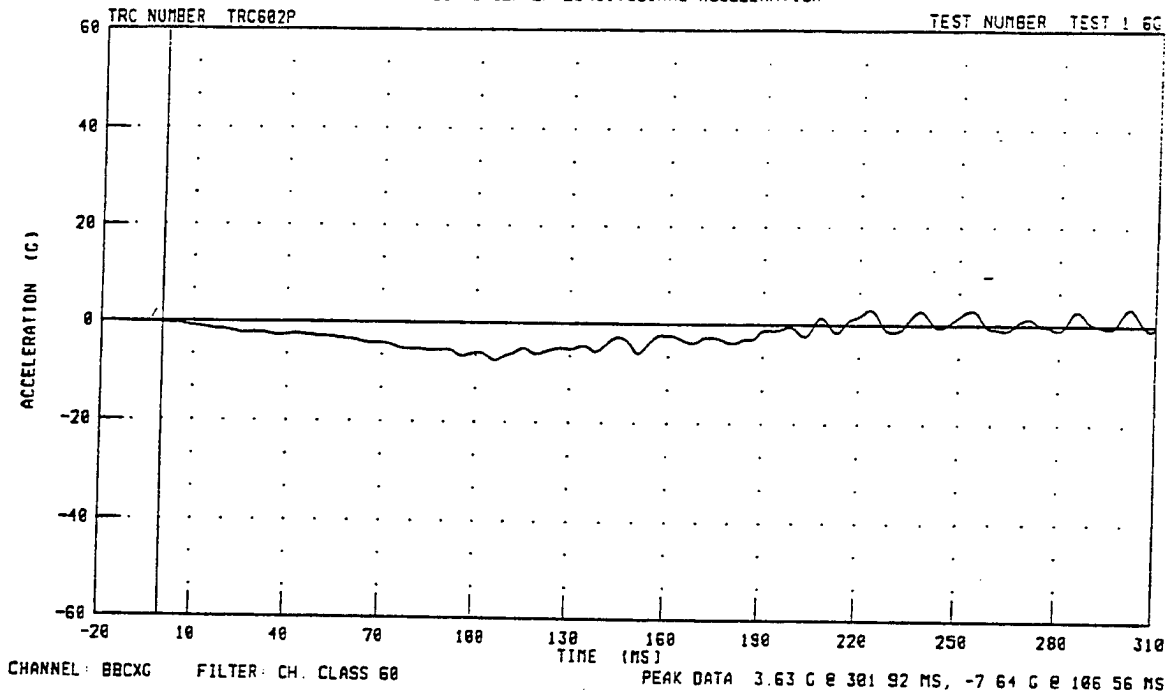
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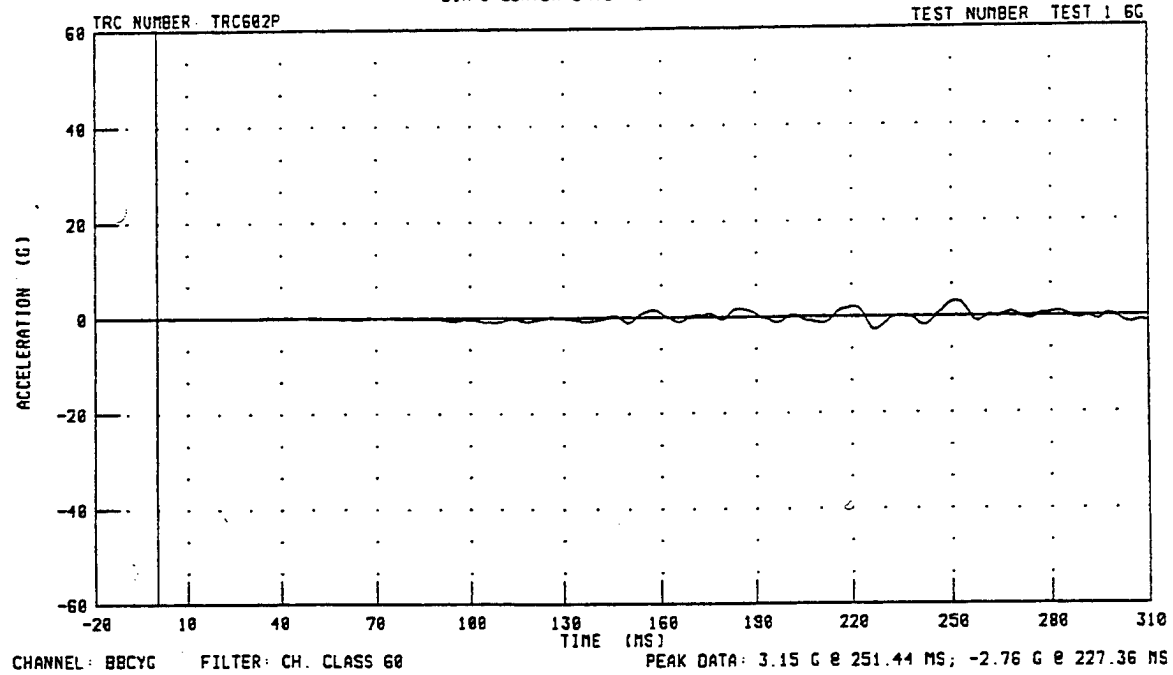
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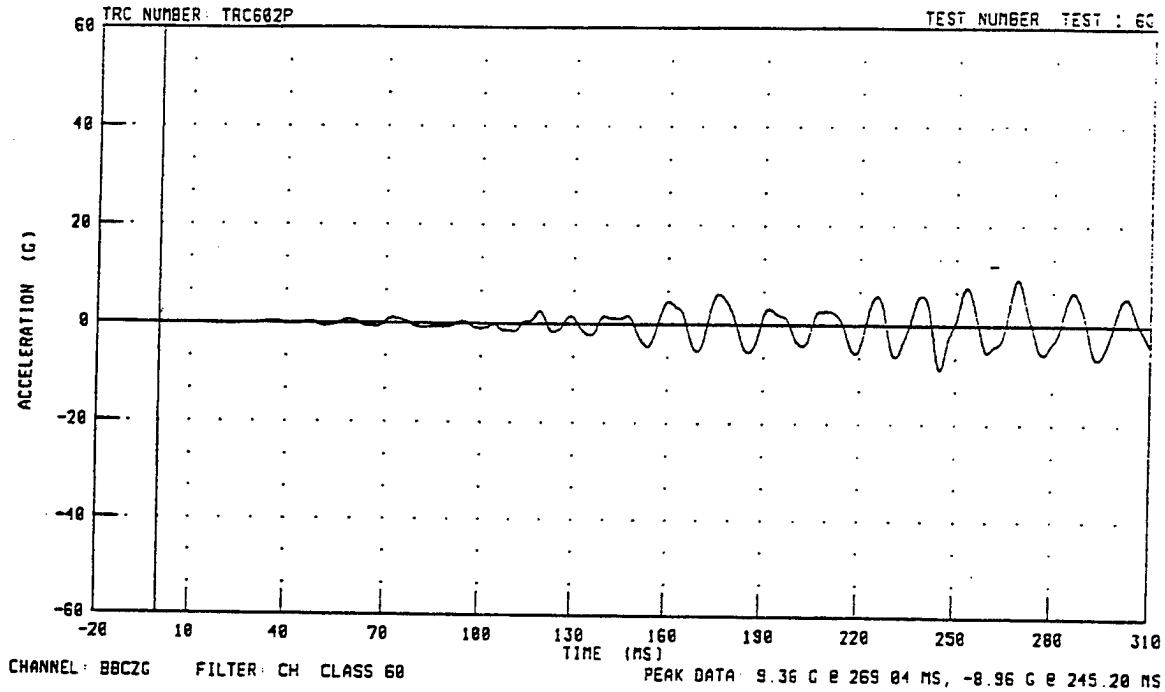
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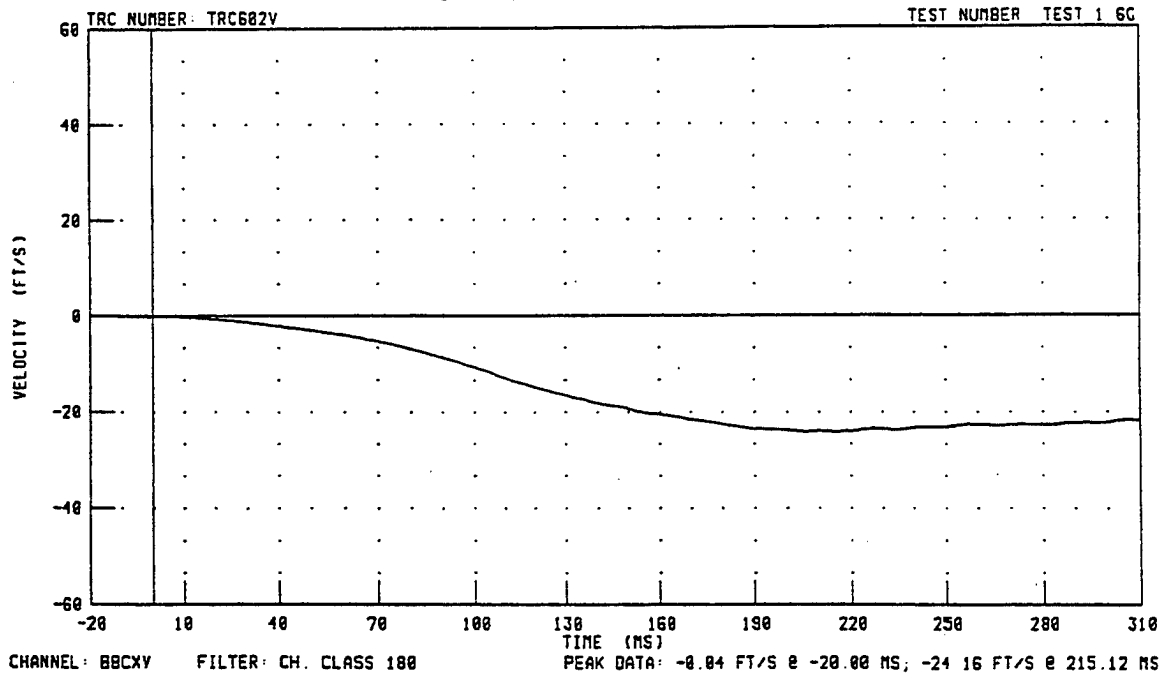
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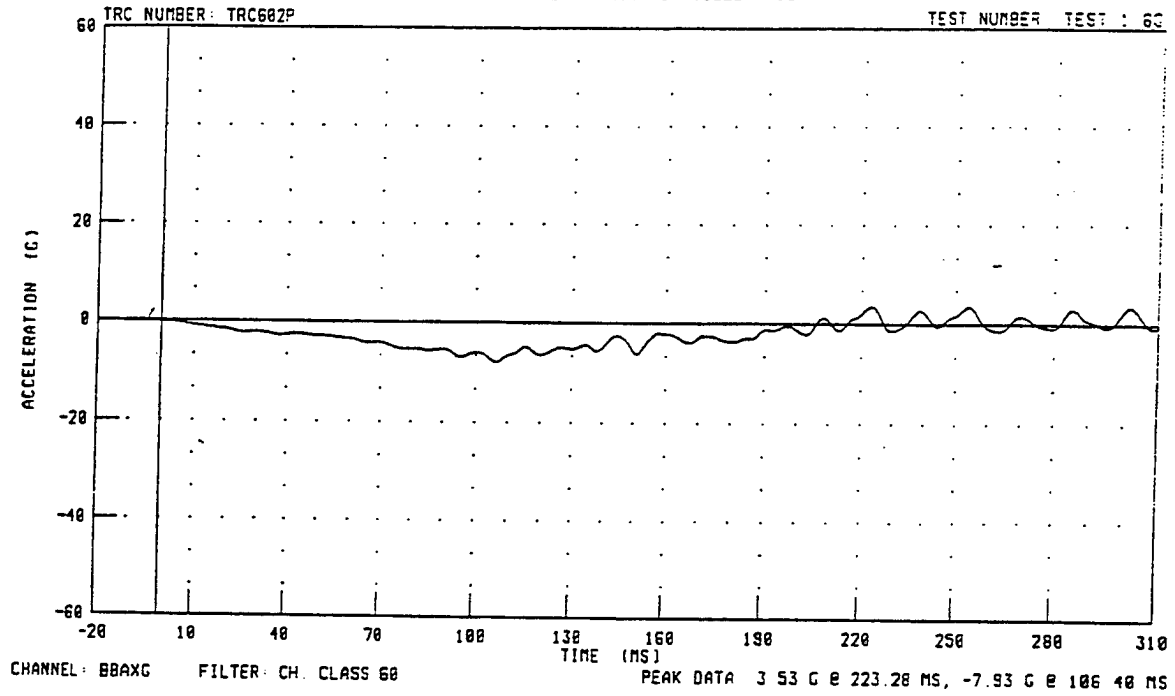
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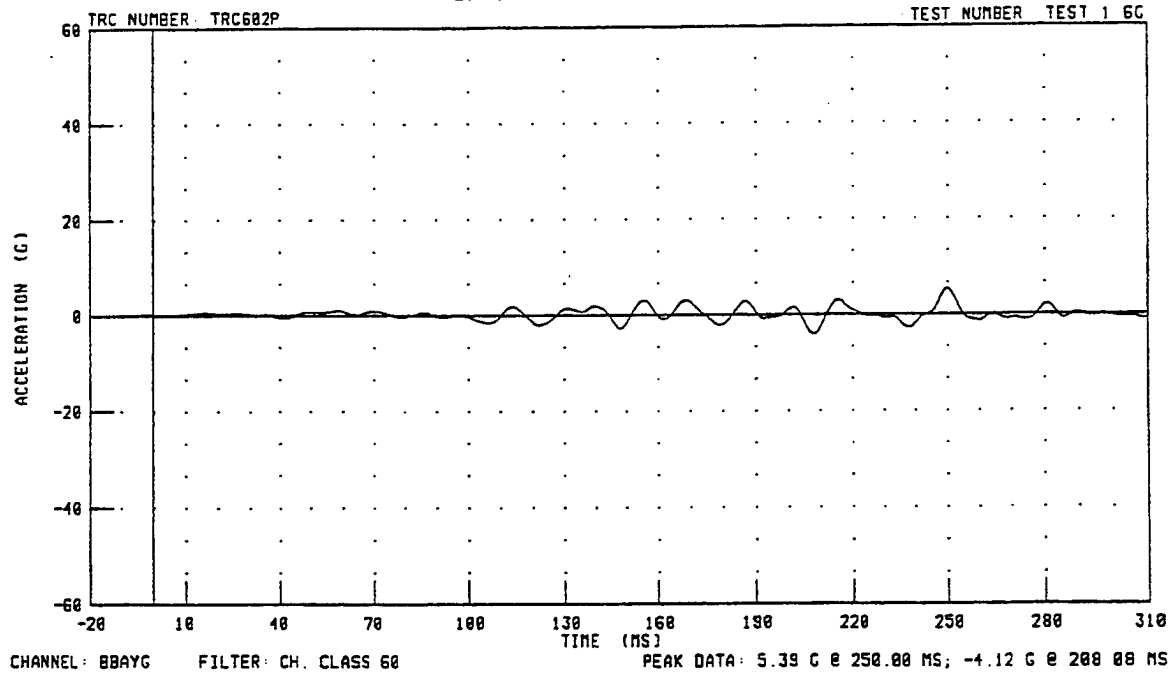
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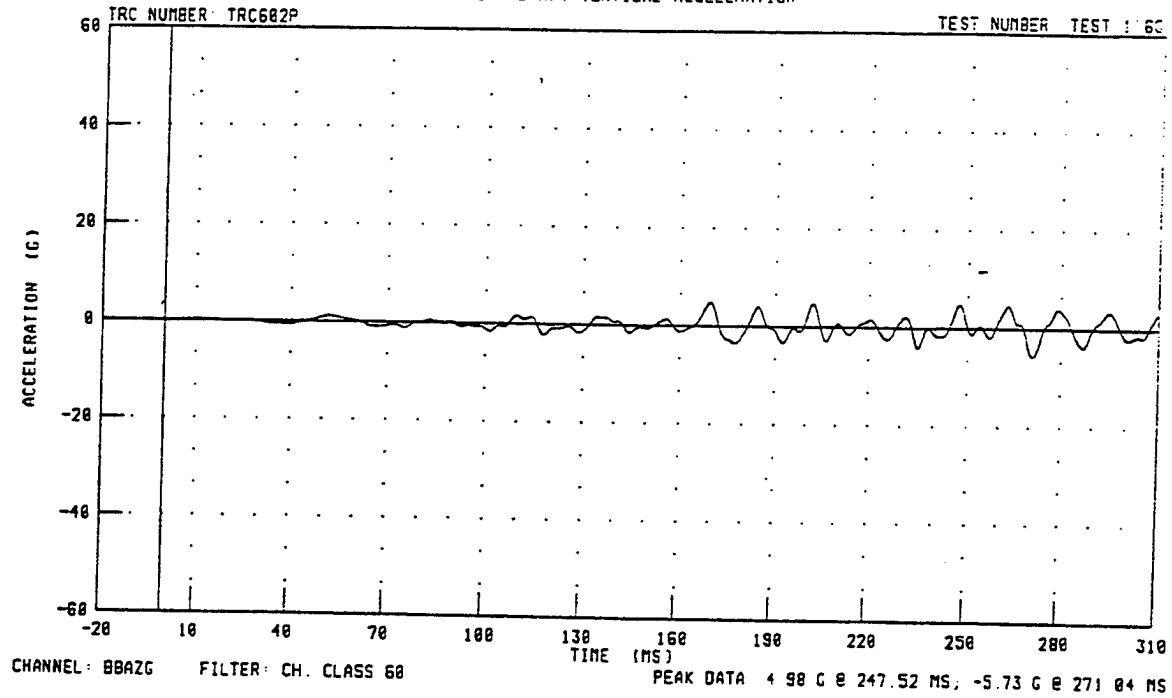
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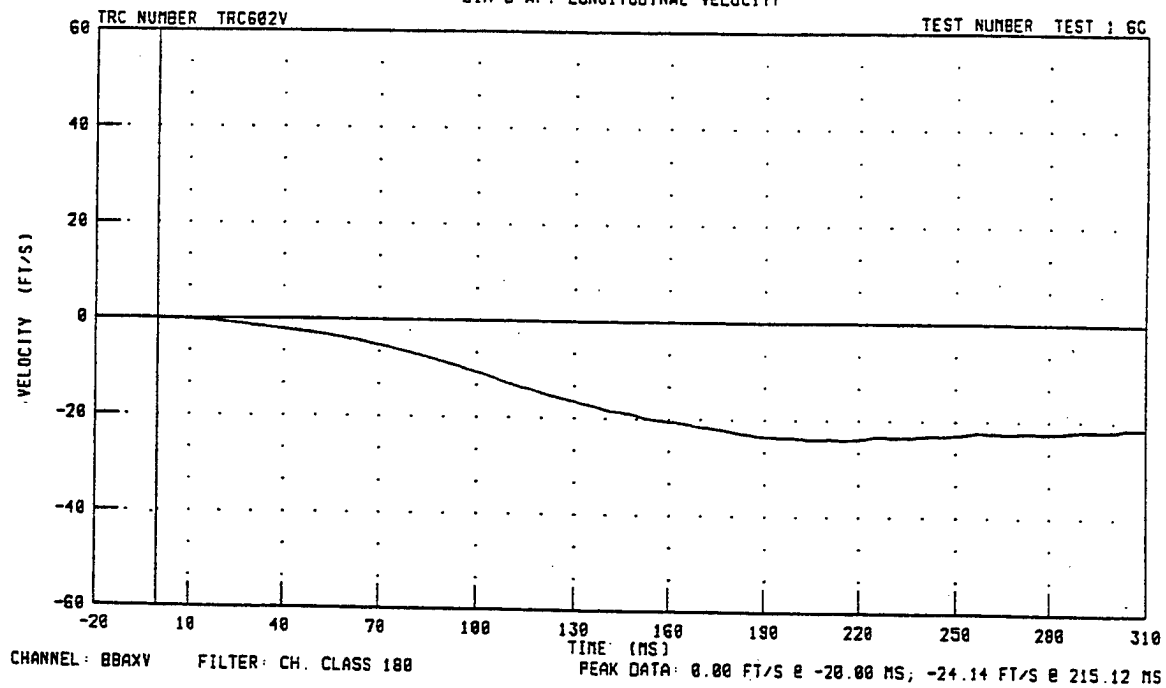
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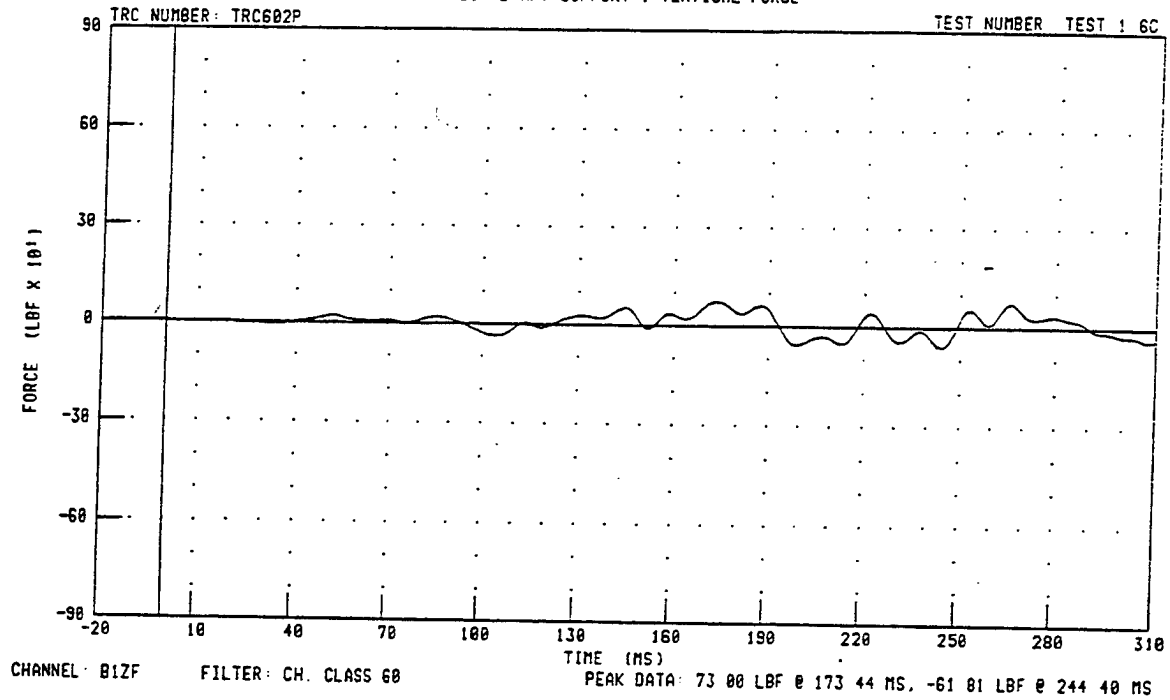
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BIN 8 AFT VERTICAL ACCELERATION



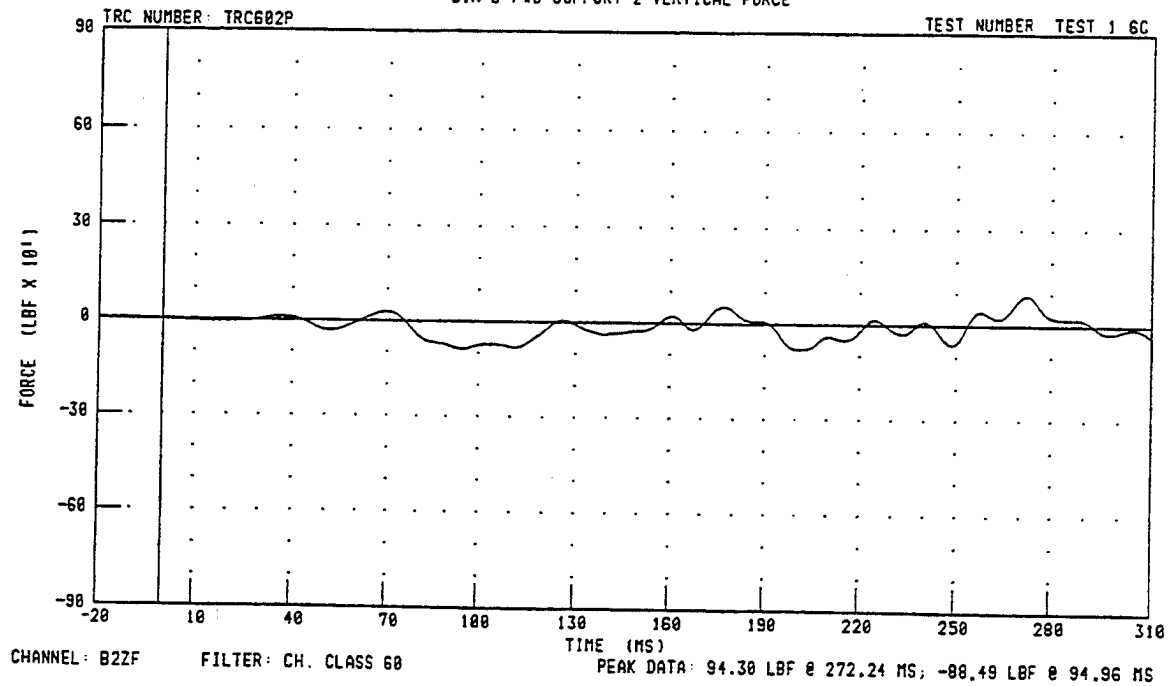
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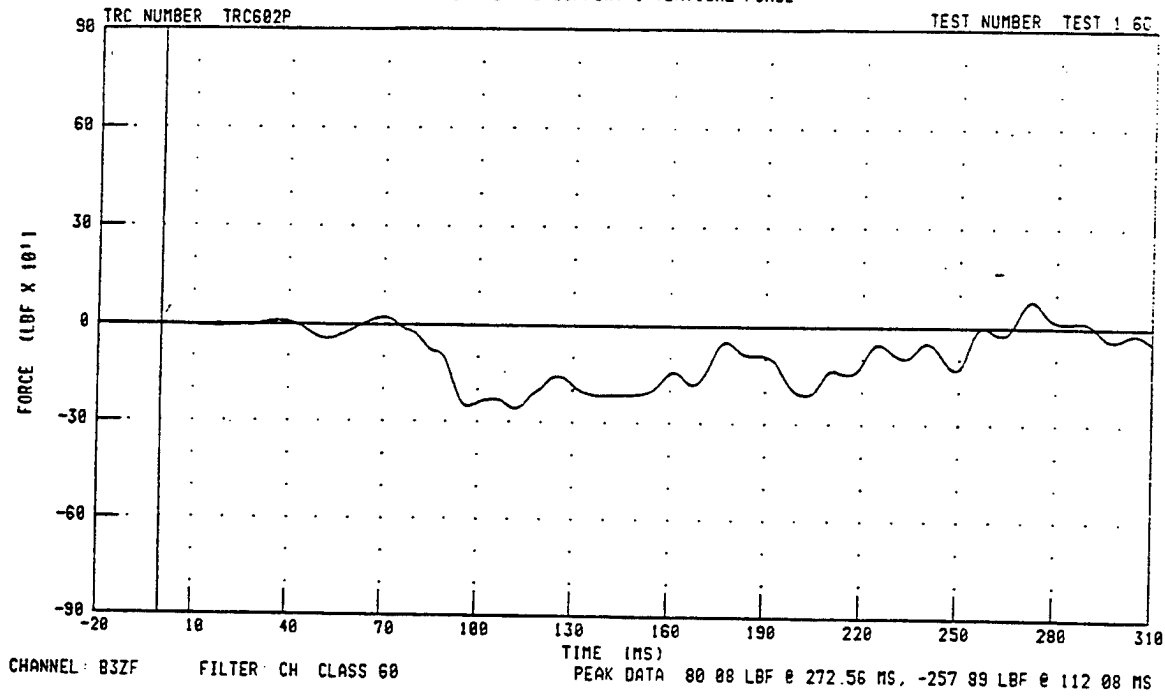
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BIN B AFT SUPPORT 1 VERTICAL FORCE



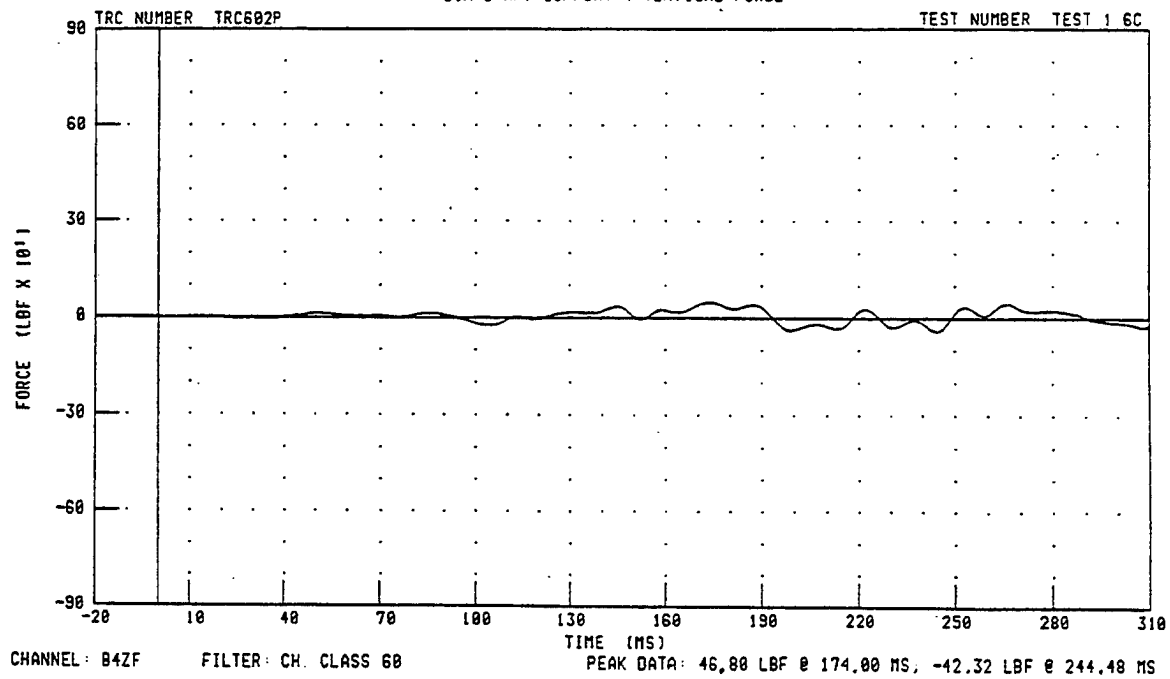
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BIN B FWD SUPPORT 2 VERTICAL FORCE



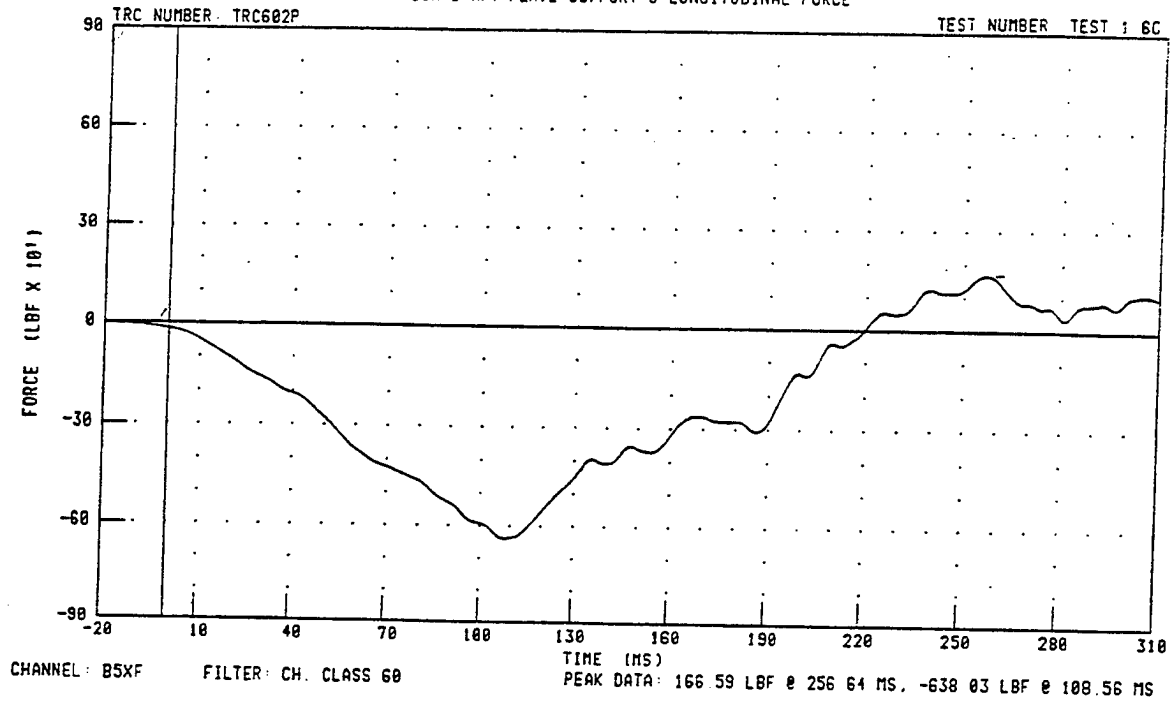
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BIN B FWD SUPPORT 3 VERTICAL FORCE



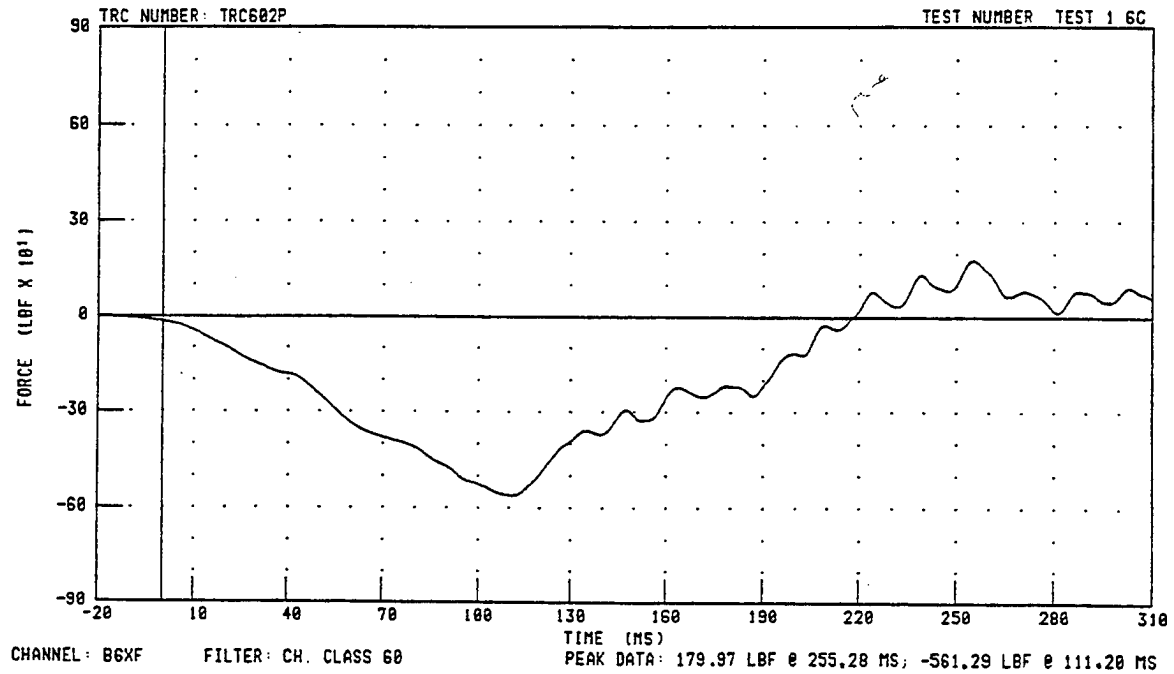
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BIN B AFT SUPPORT 4 VERTICAL FORCE



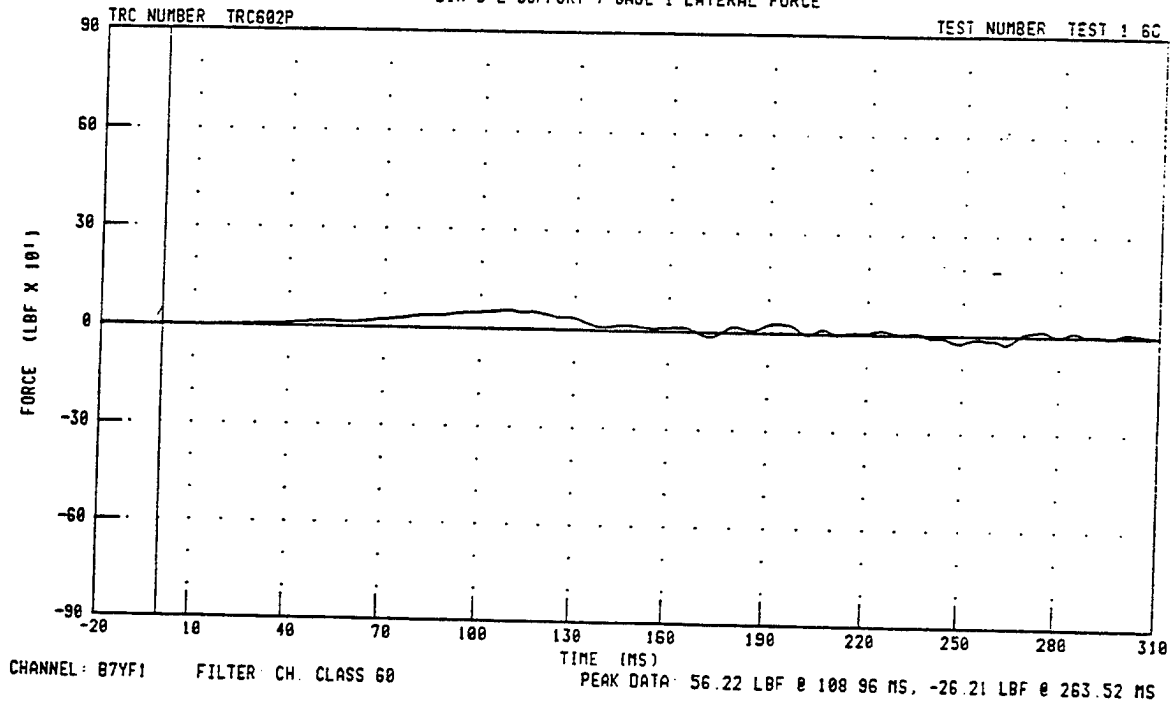
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BIN B AFT PLATE SUPPORT 5 LONGITUDINAL FORCE



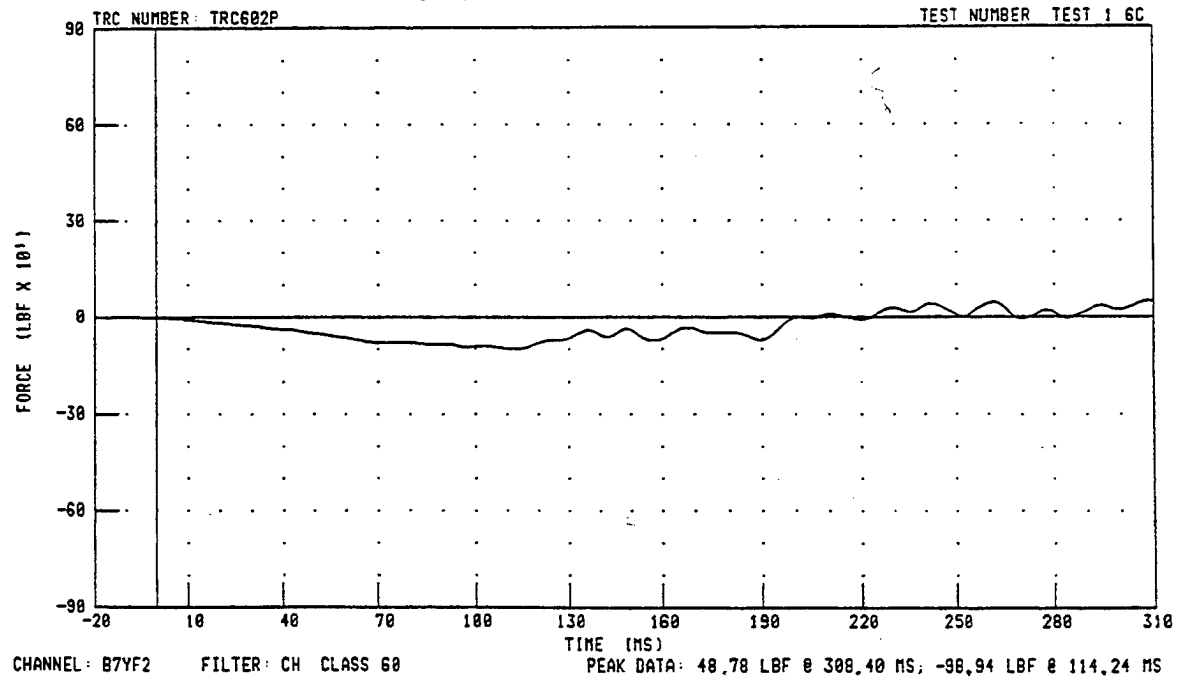
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BIN B FWD PLATE SUPPORT 6 LONGITUDINAL FORCE



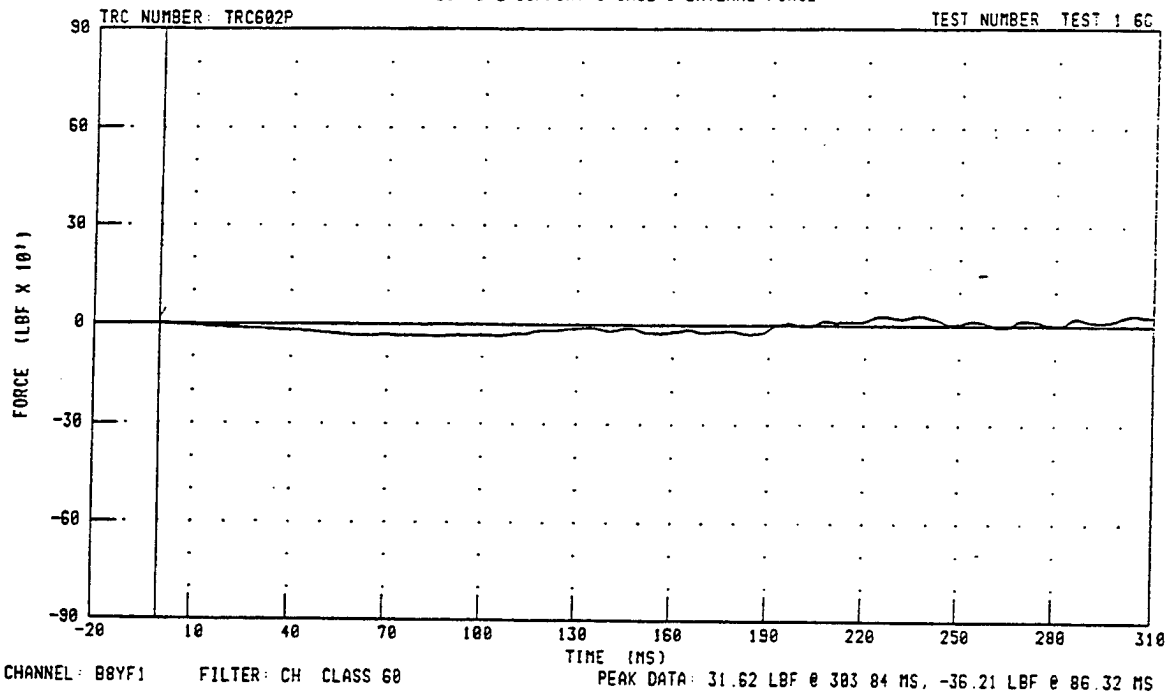
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BIN B L SUPPORT 7 GAGE 1 LATERAL FORCE



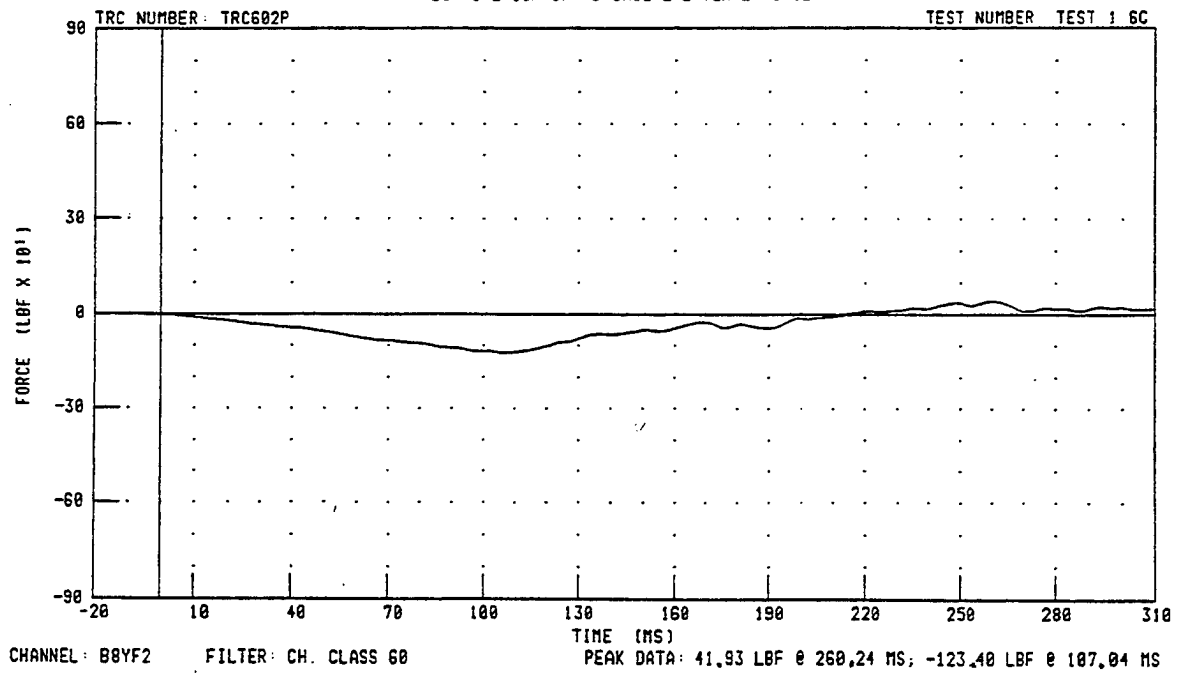
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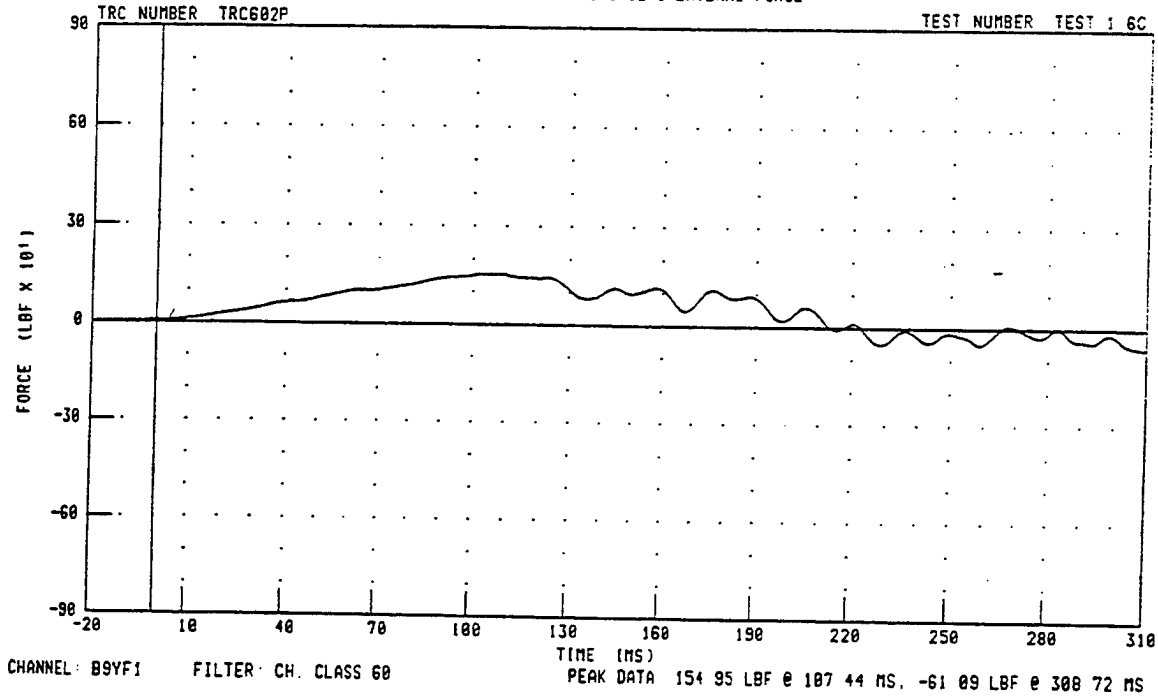
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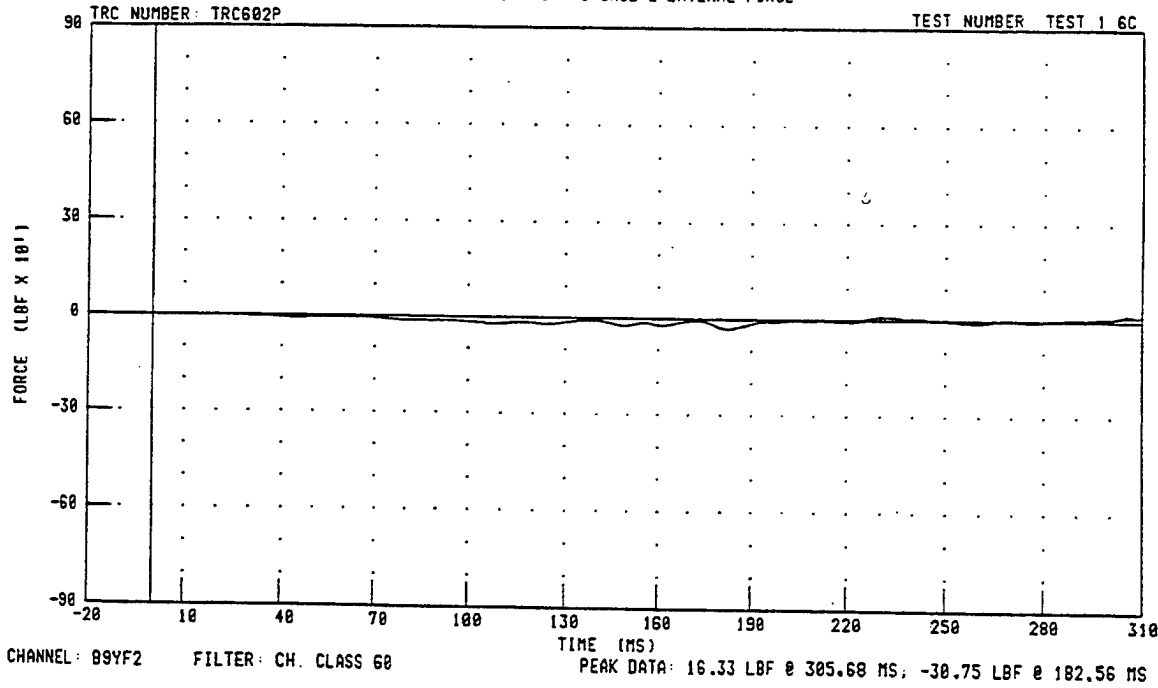
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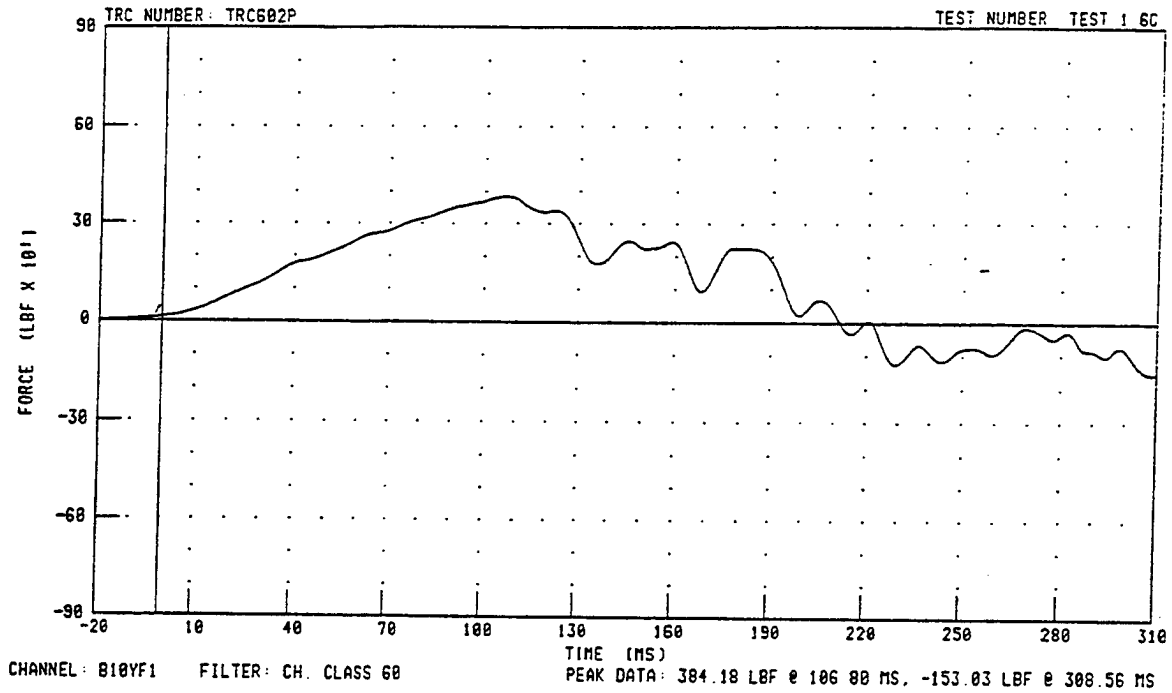
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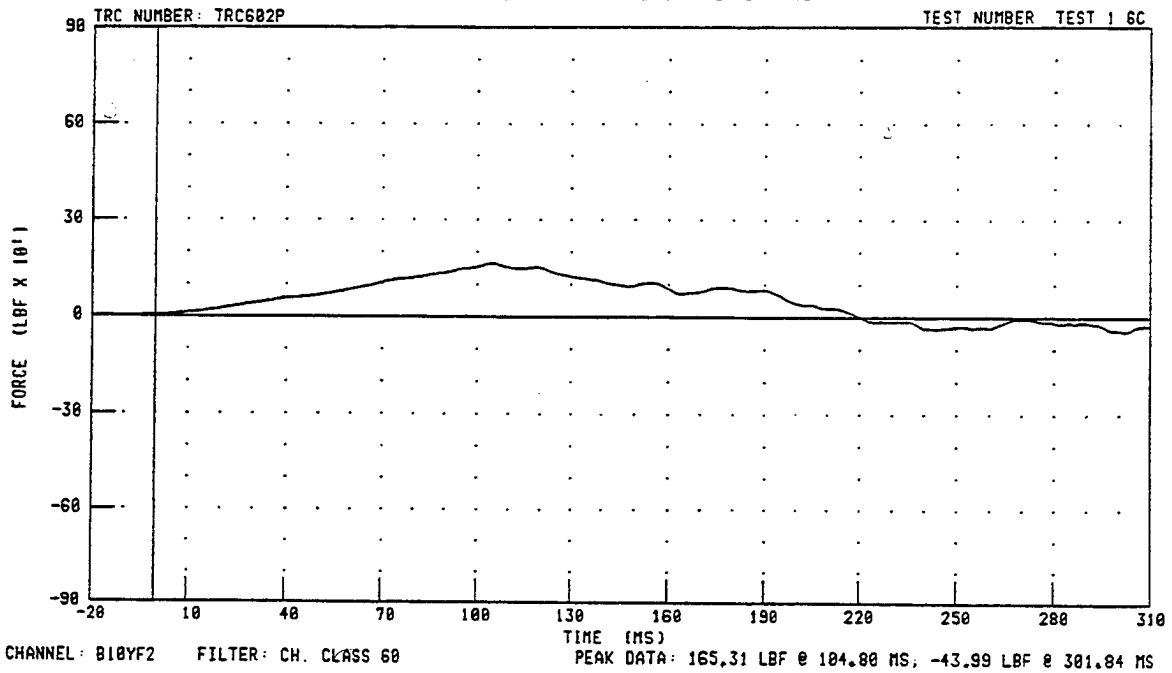
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BIN B L SUPPORT 9 GAGE 2 LATERAL FORCE



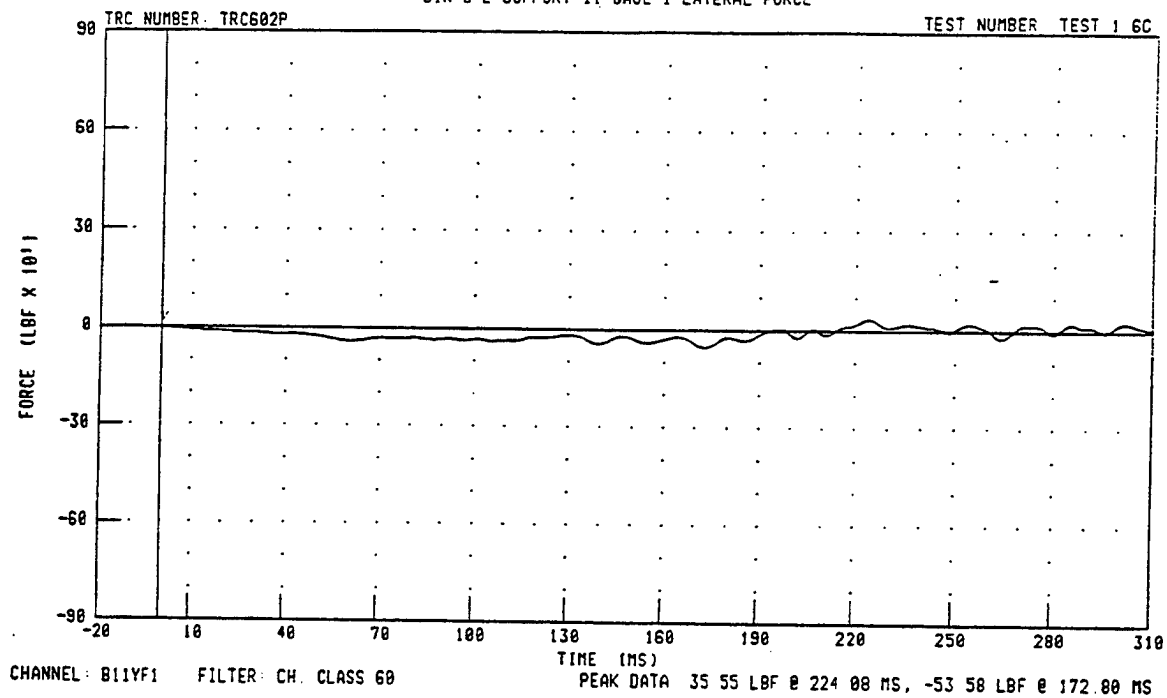
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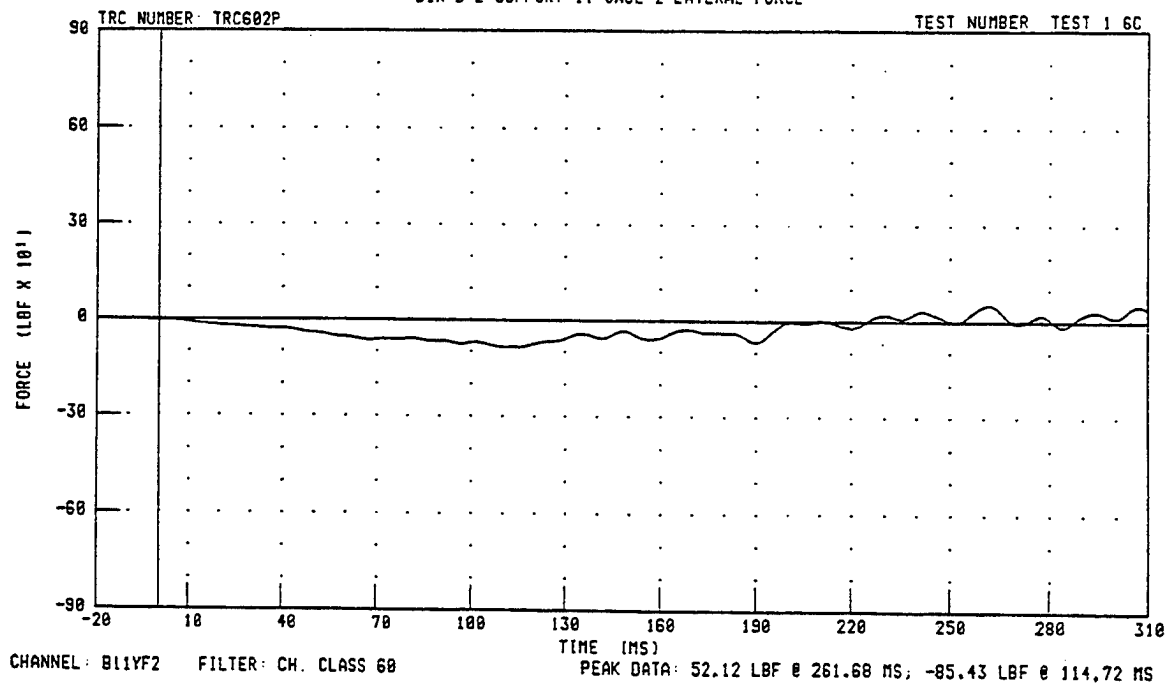
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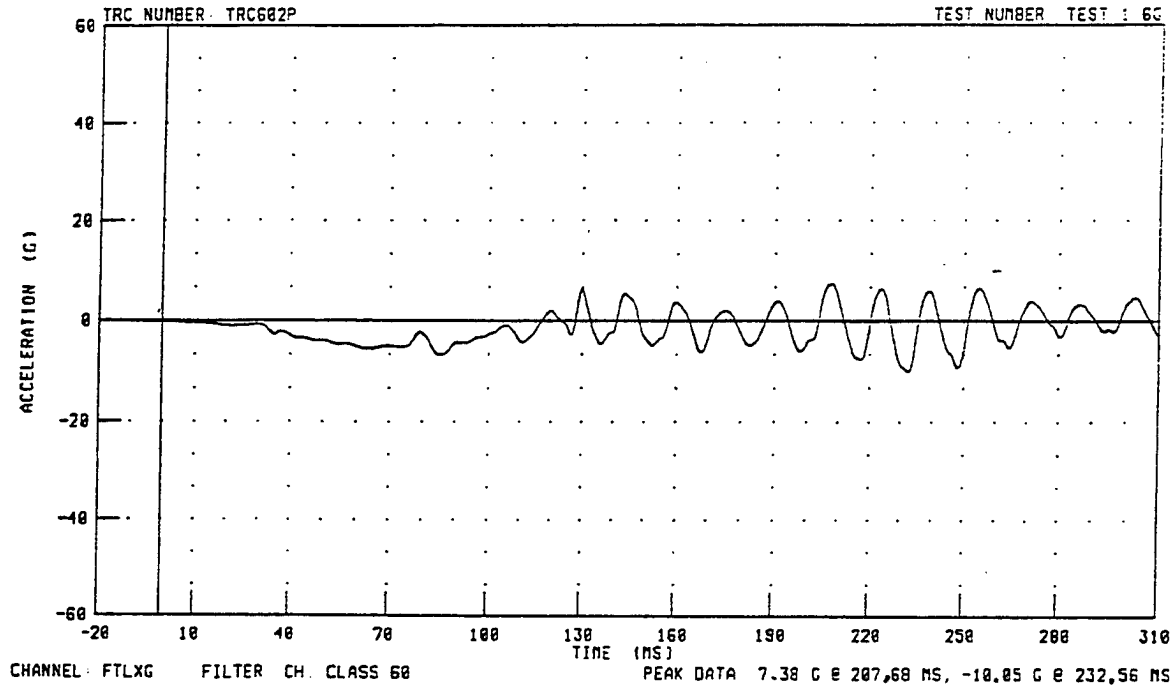
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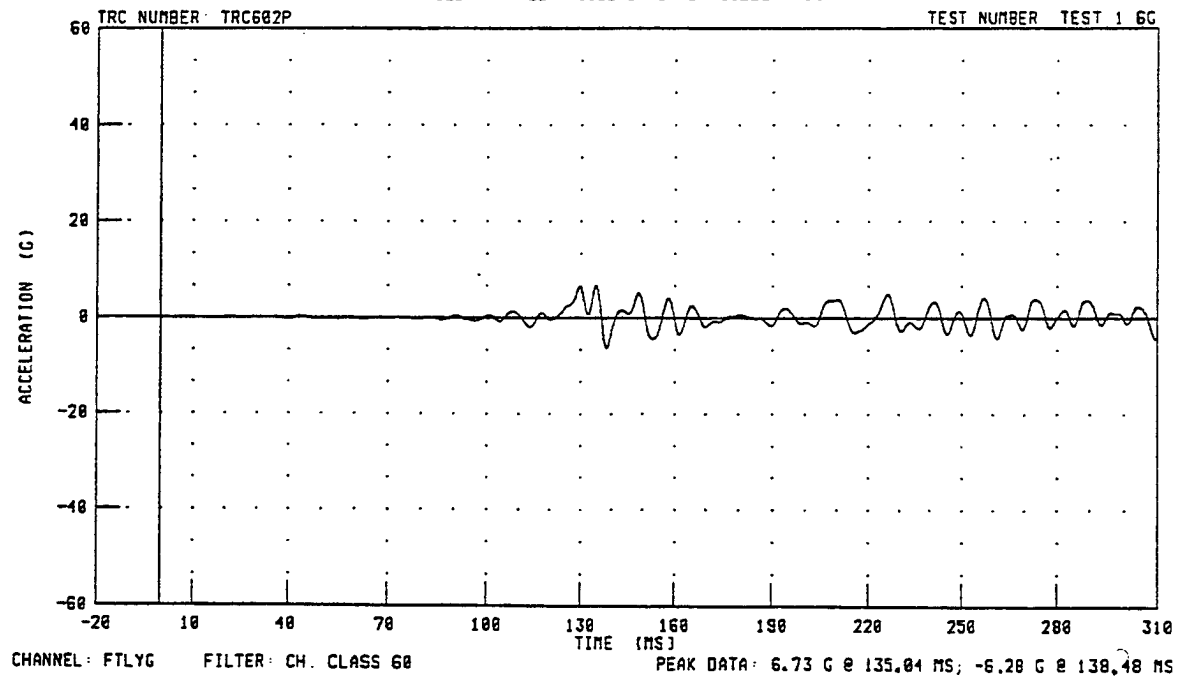
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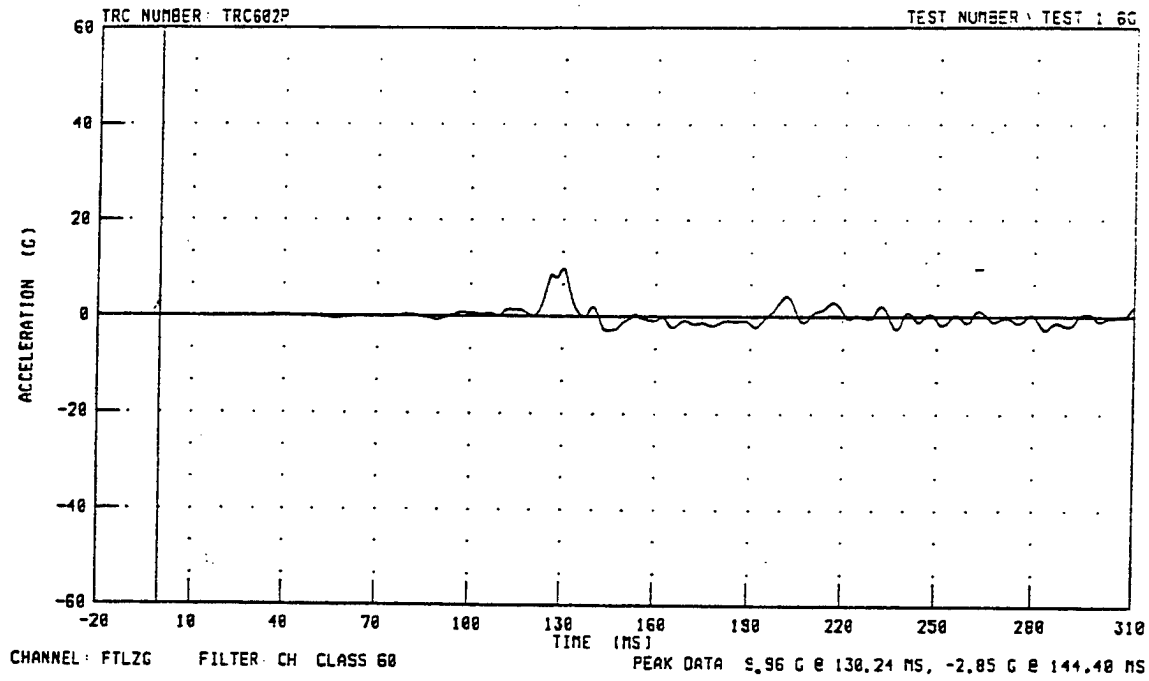
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FUEL TANK LEFT SIDE LONGITUDINAL ACCELERATION



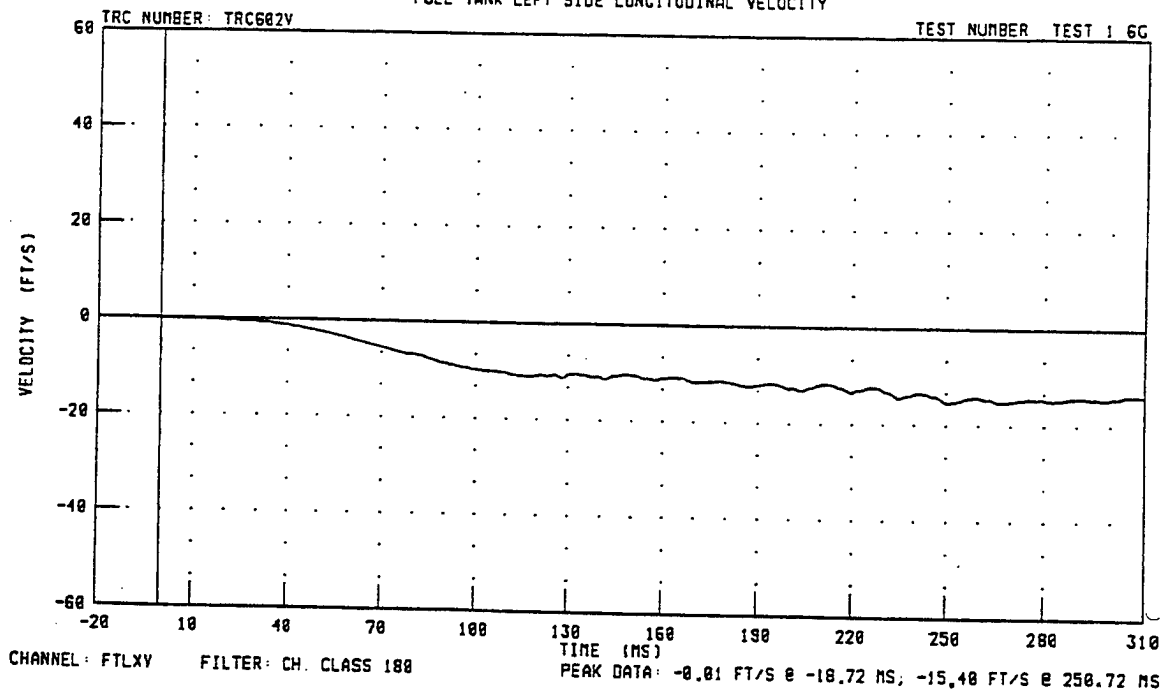
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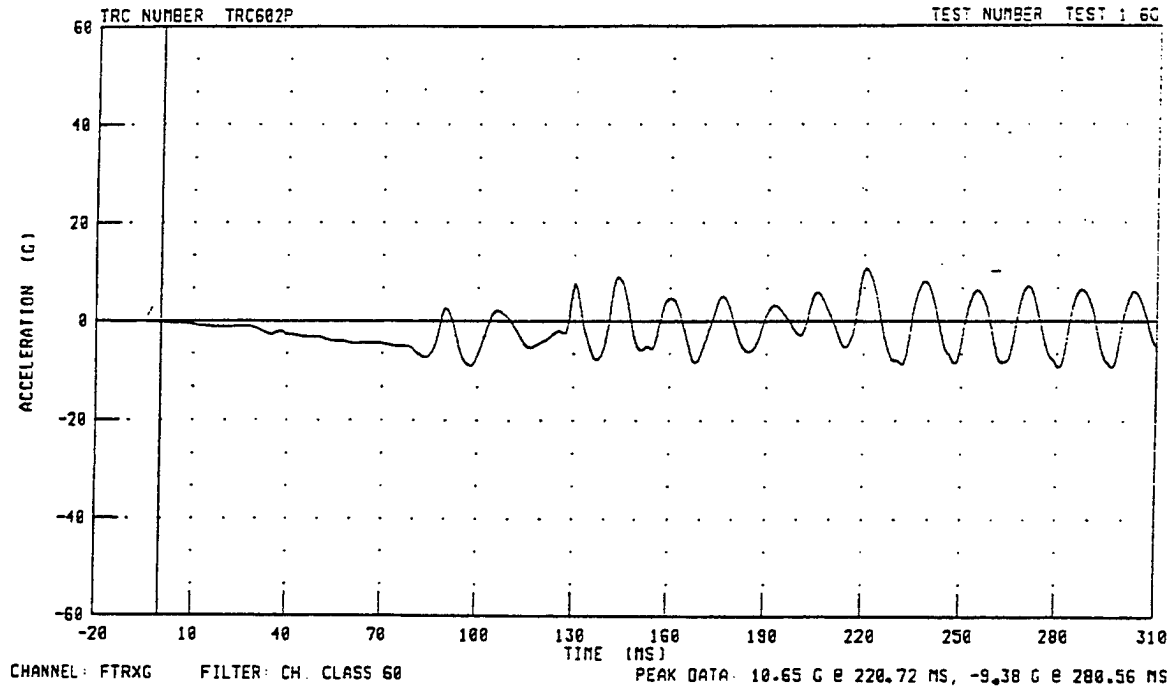
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FUEL TANK LEFT SIDE VERTICAL ACCELERATION



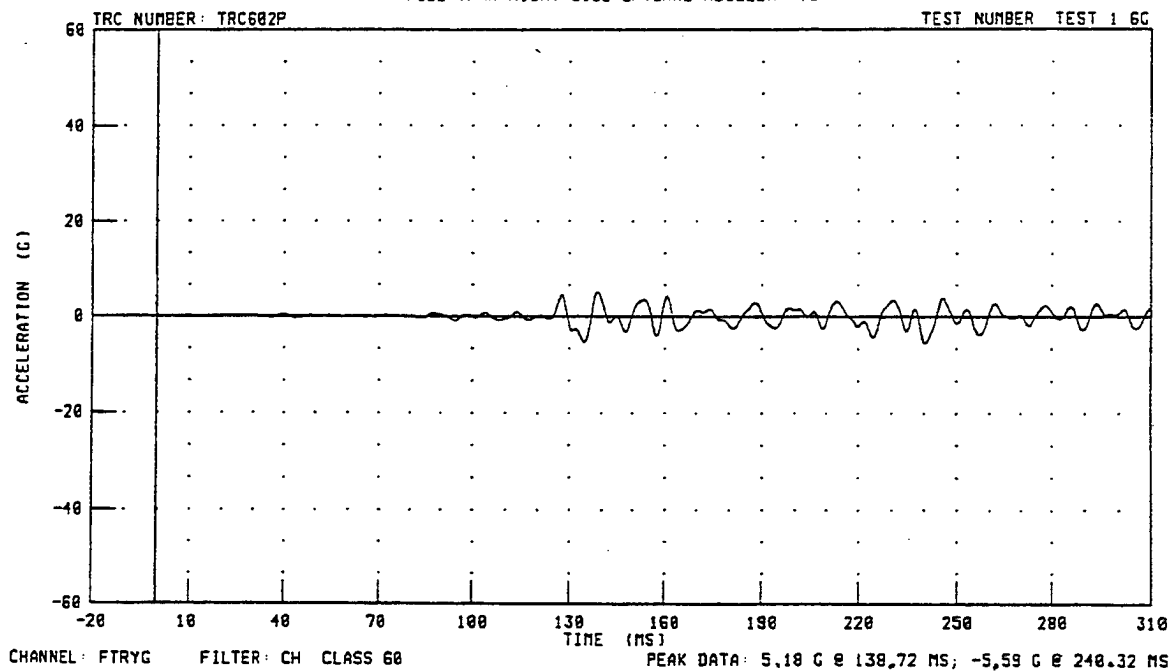
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FUEL TANK LEFT SIDE LONGITUDINAL VELOCITY



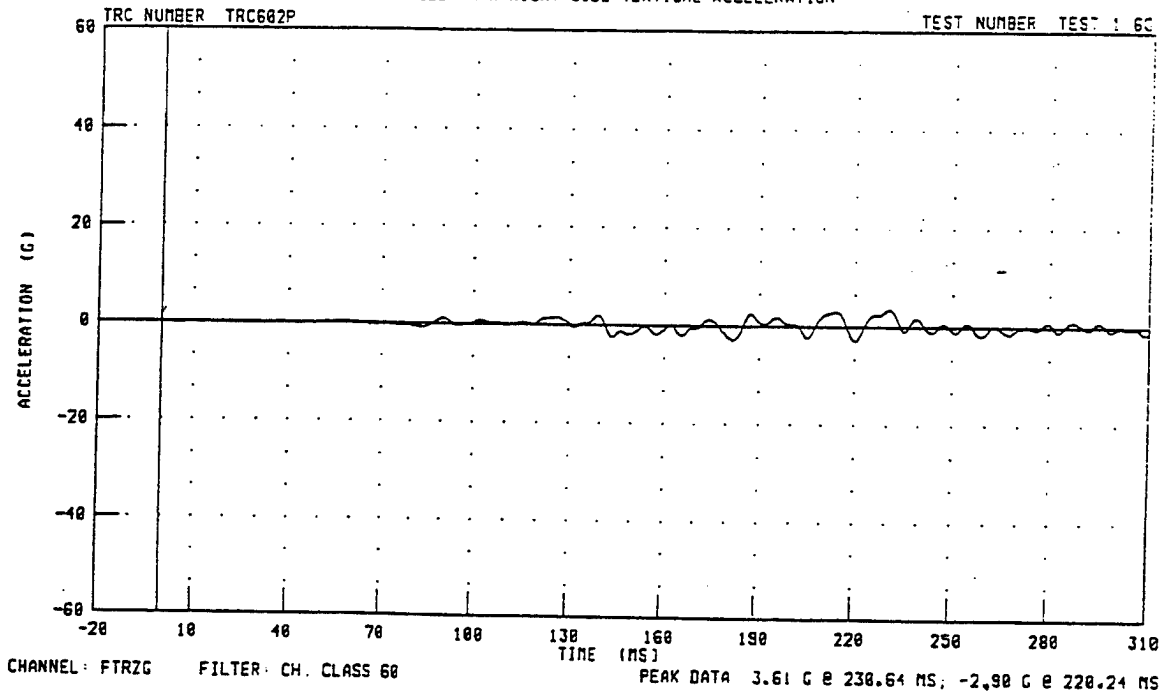
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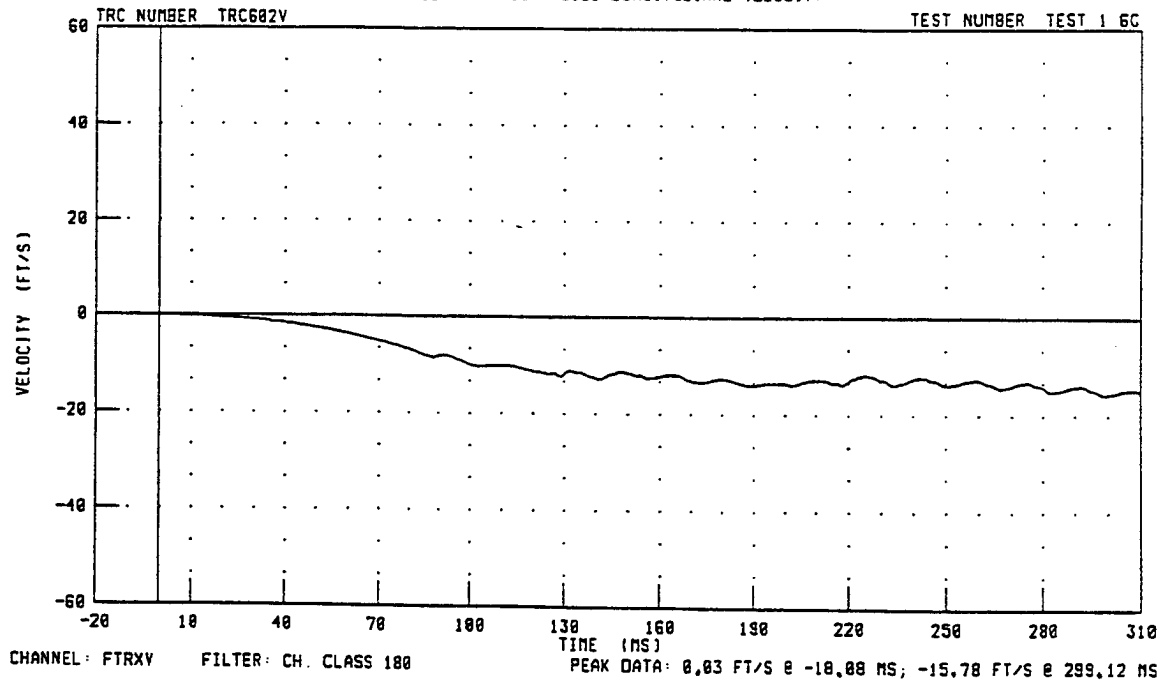
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FUEL TANK RIGHT SIDE LATERAL ACCELERATION



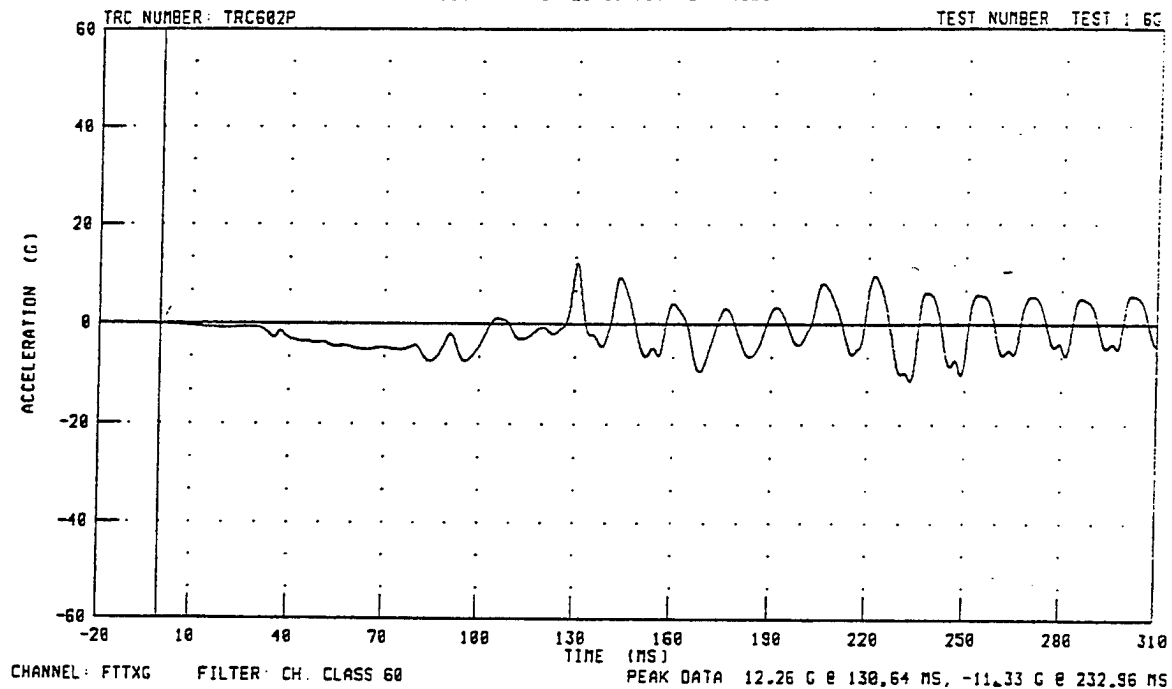
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FUEL TANK RIGHT SIDE VERTICAL ACCELERATION



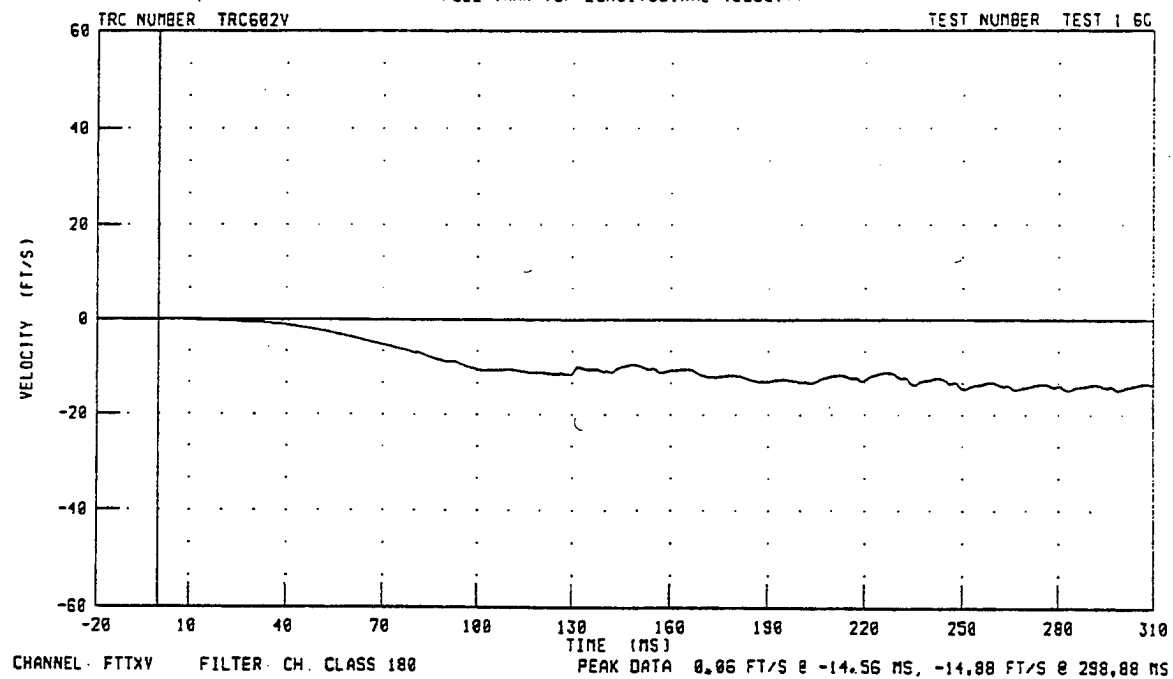
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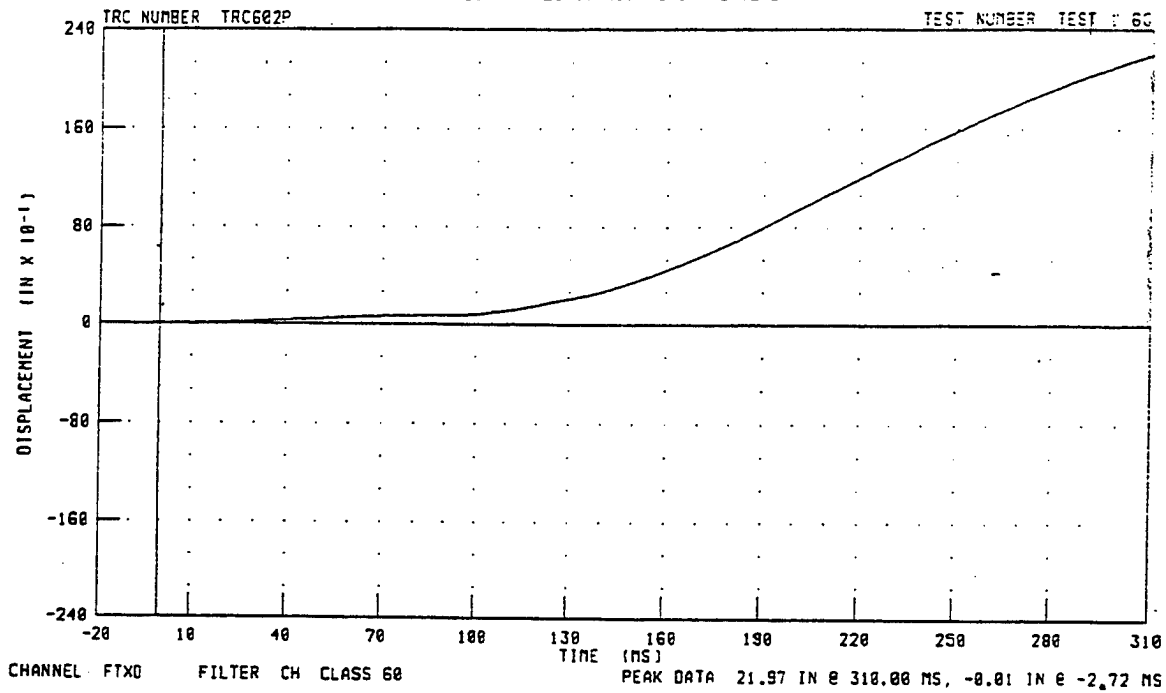
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FUEL TANK TOP LONGITUDINAL ACCELERATION



B737 LONGITUDINAL IMPACT 6G 19 NOV 97
FUEL TANK TOP LONGITUDINAL VELOCITY

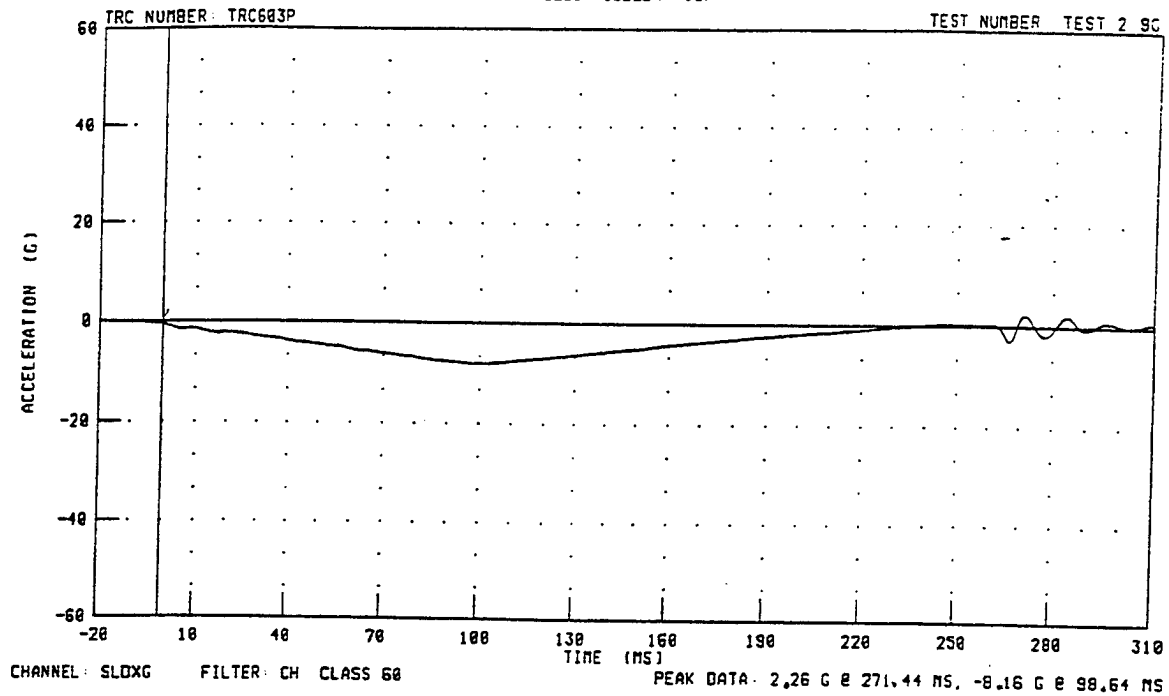


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FUEL TANK LONGITUDINAL DISPLACEMENT

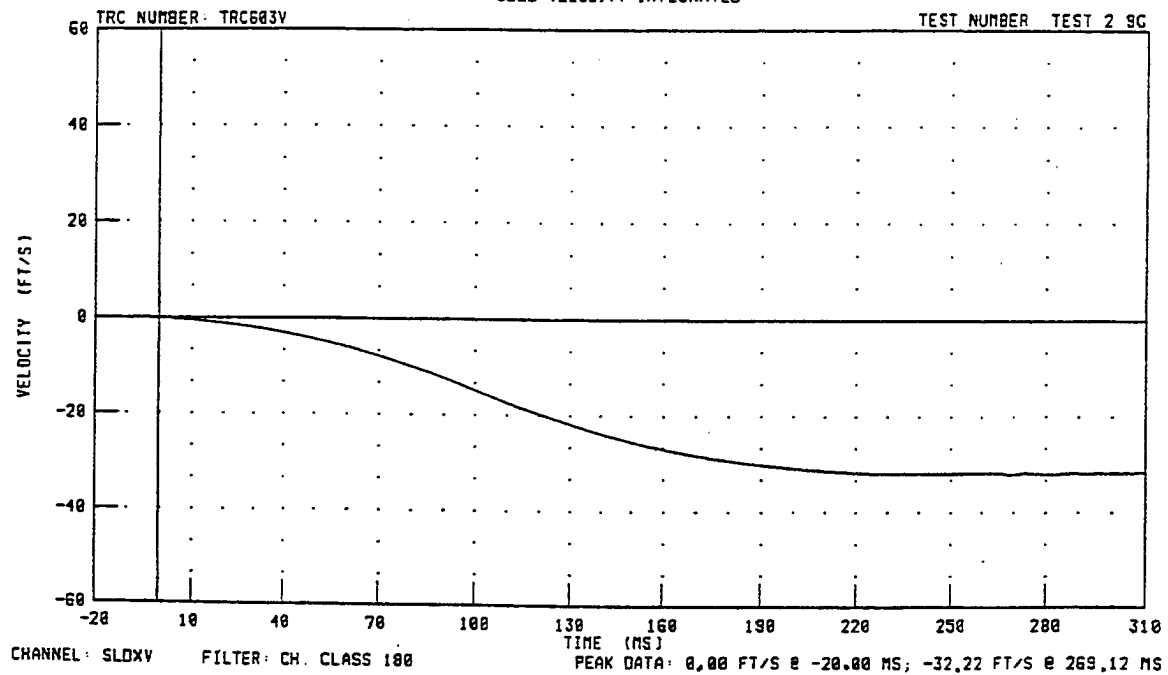


TEST 2

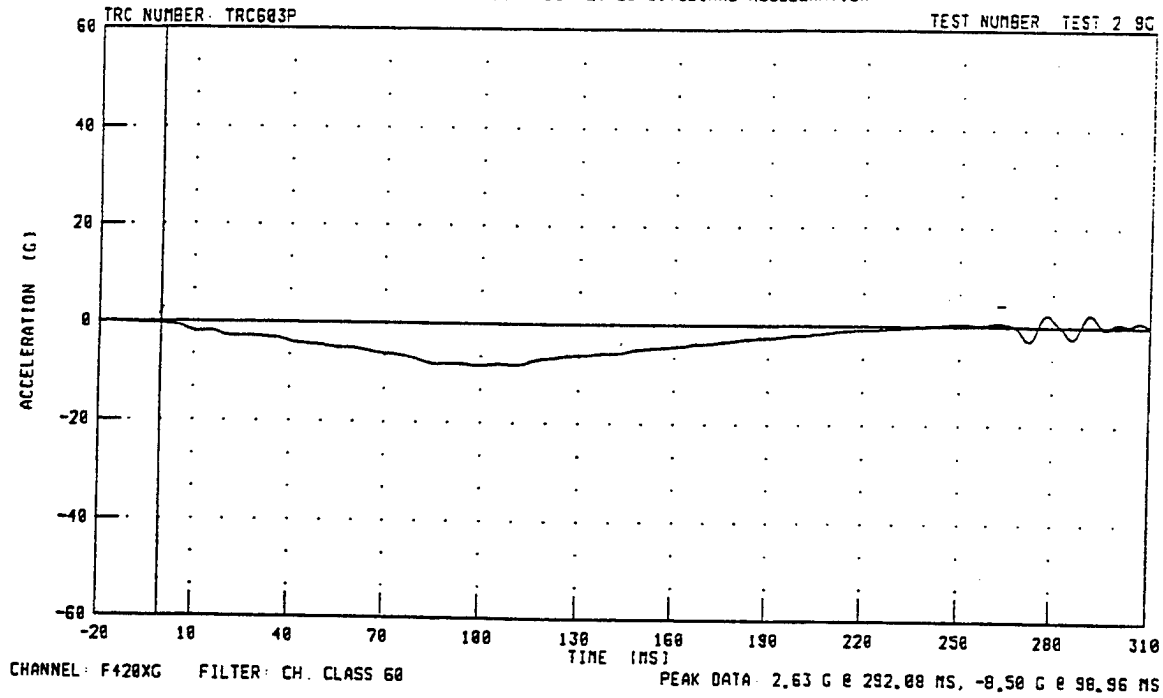
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SLED ACCELERATION



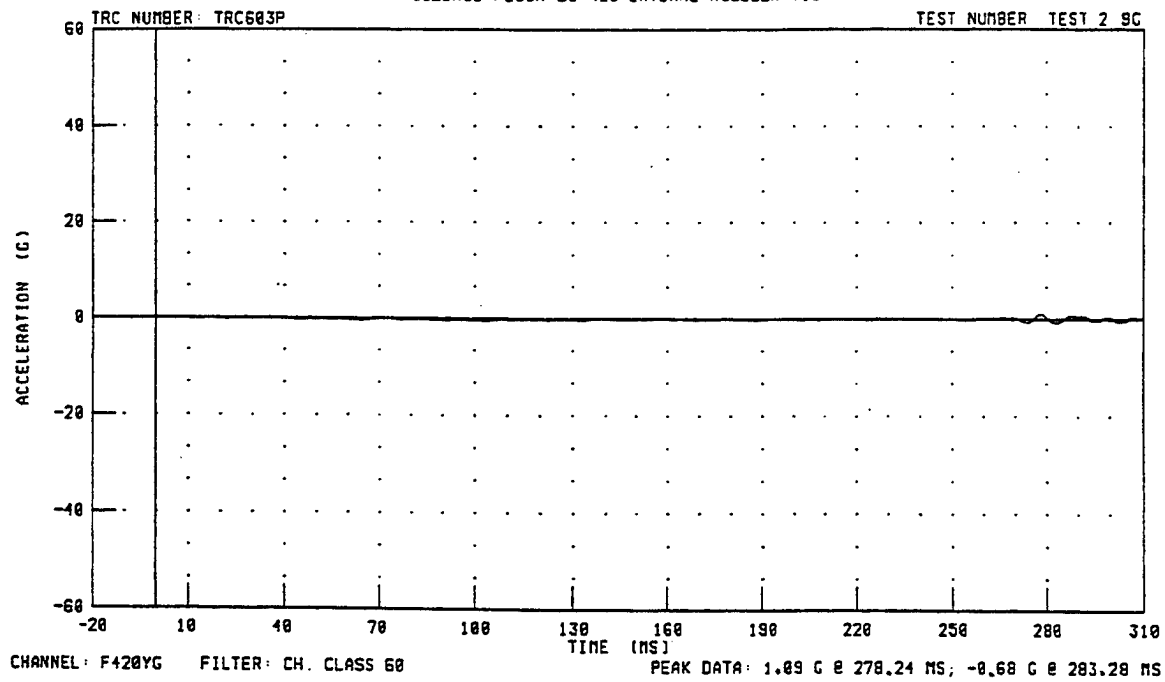
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SLED VELOCITY INTEGRATED



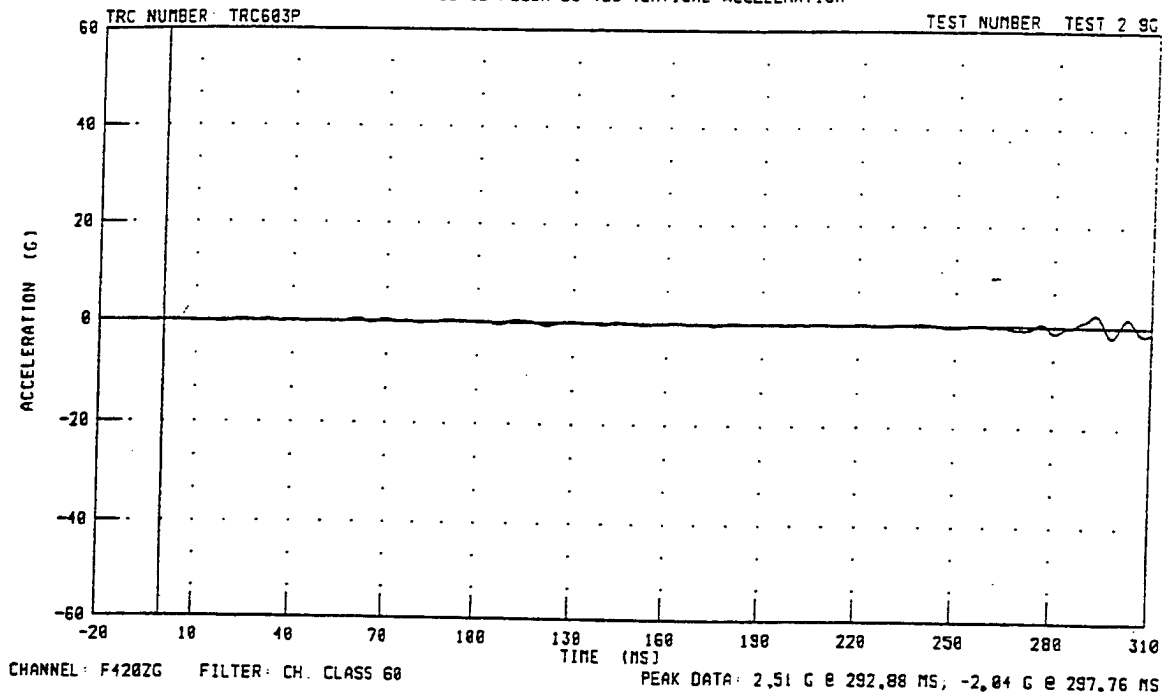
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FUSELAGE FLOOR BS 420 LONGITUDINAL ACCELERATION



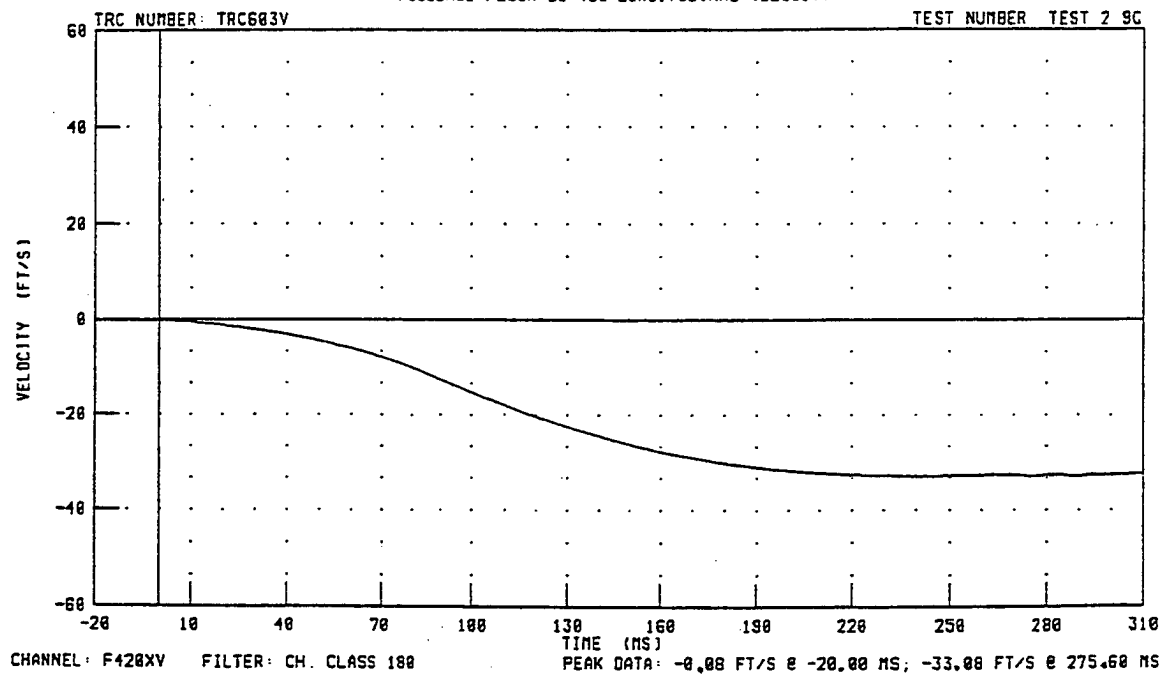
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FUSELAGE FLOOR BS 420 LATERAL ACCELERATION



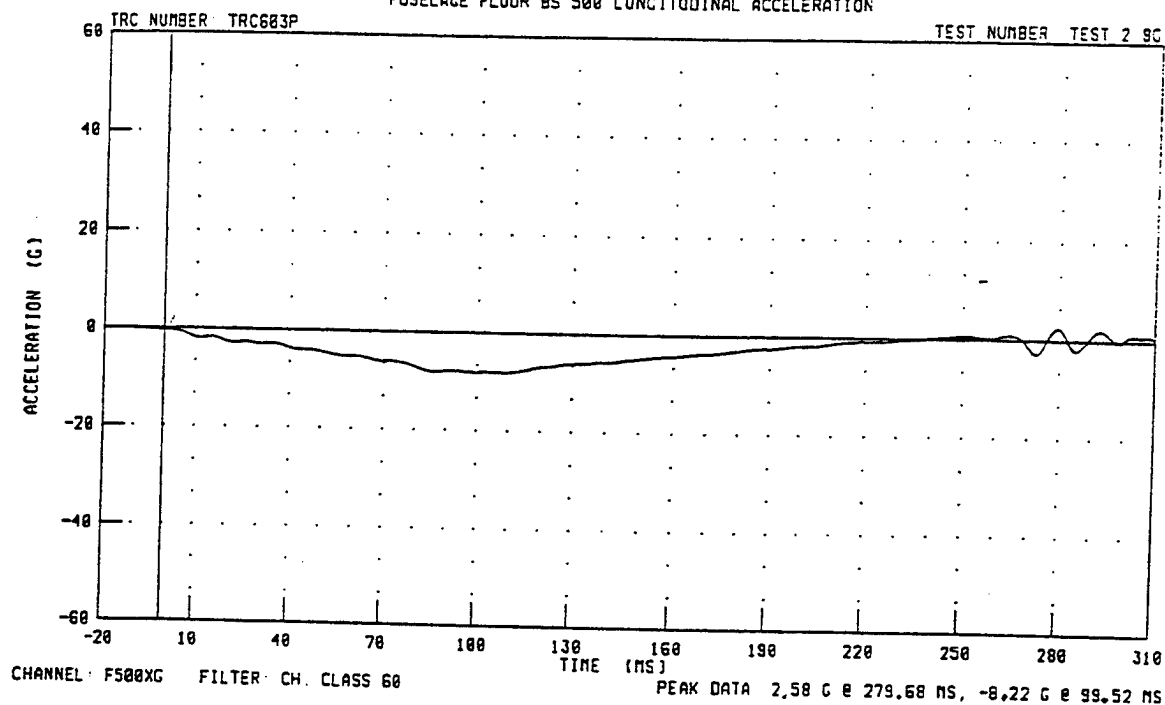
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FUSELAGE FLOOR BS 420 VERTICAL ACCELERATION



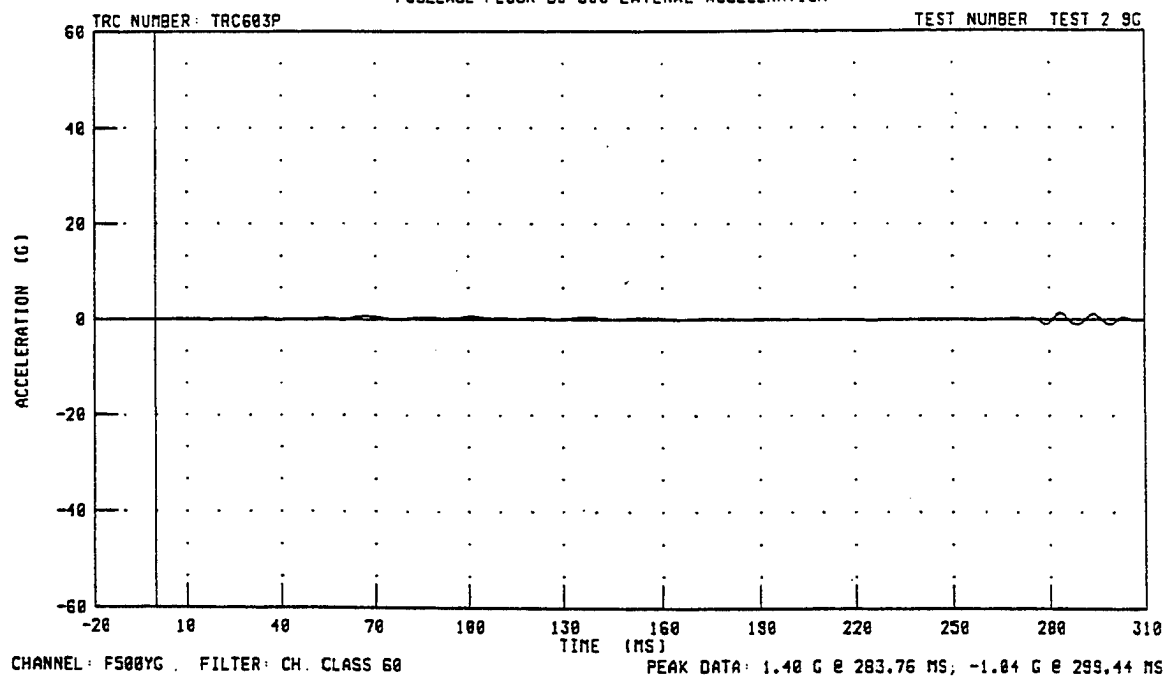
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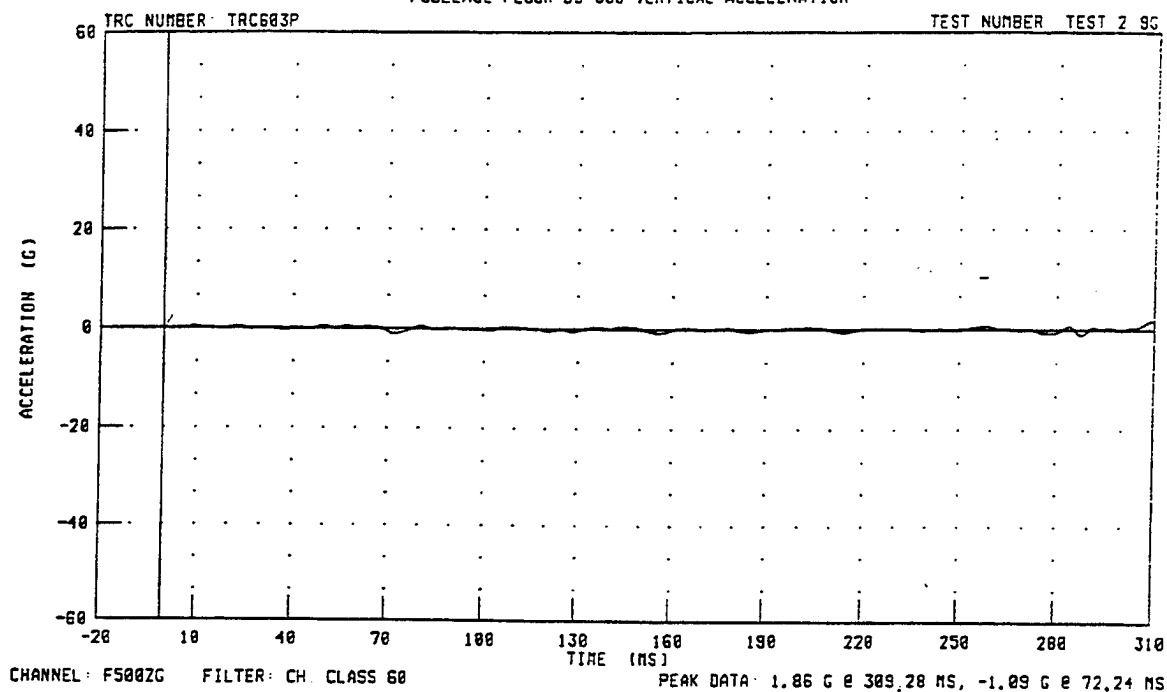
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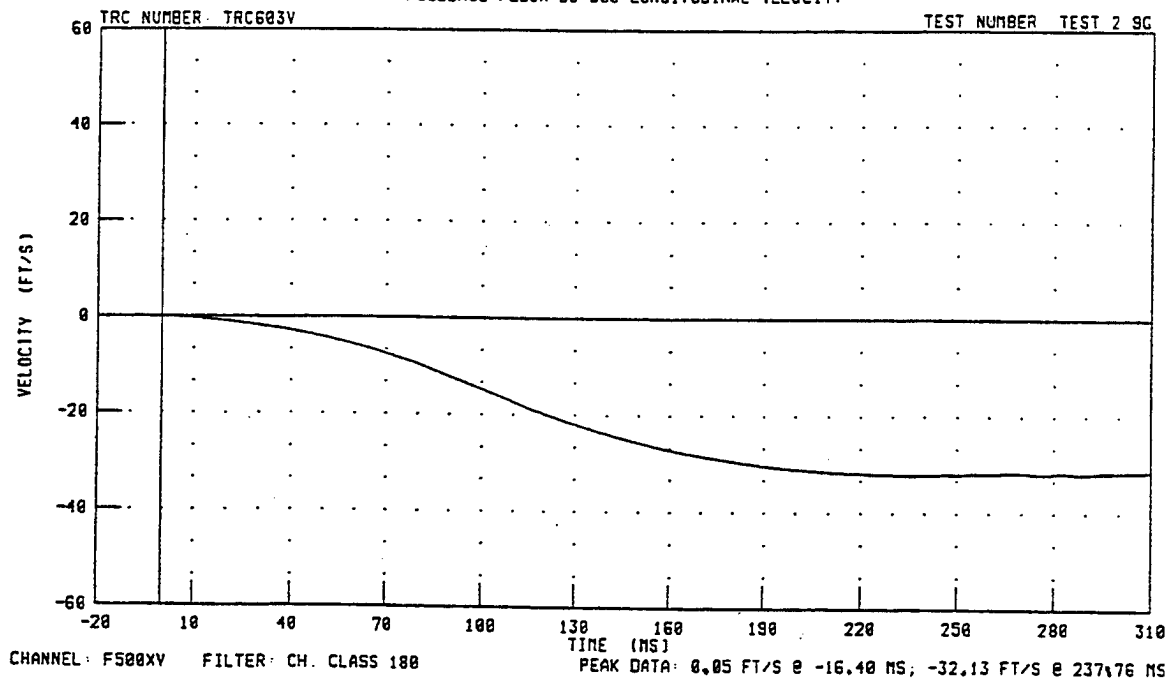
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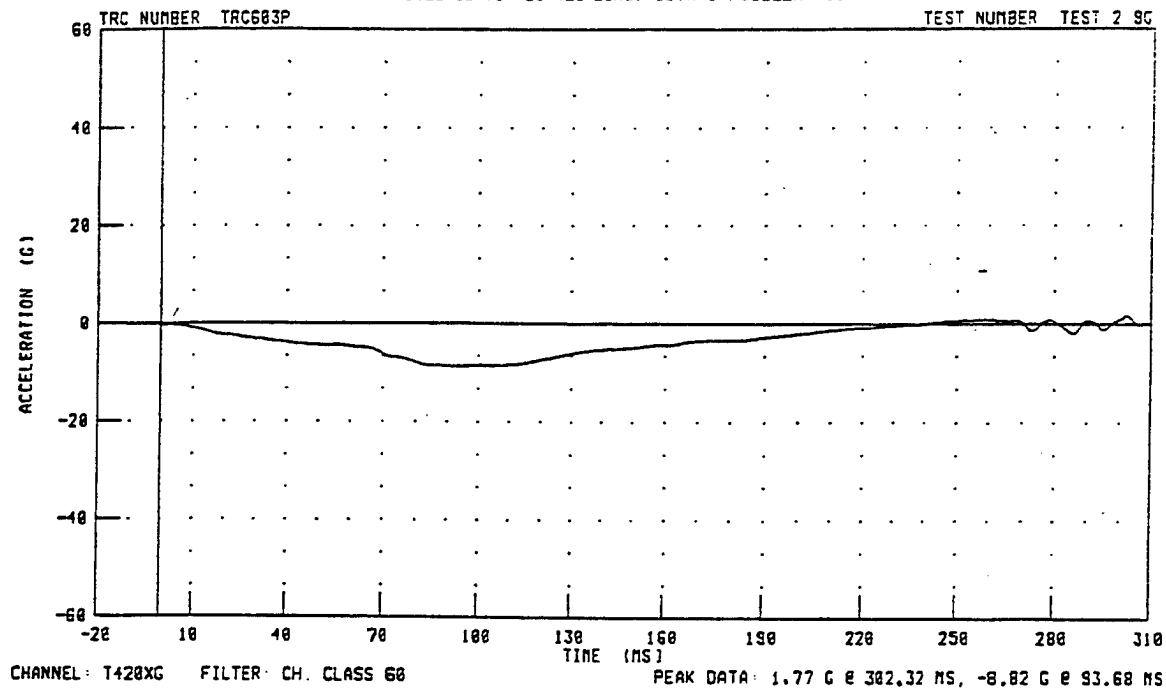
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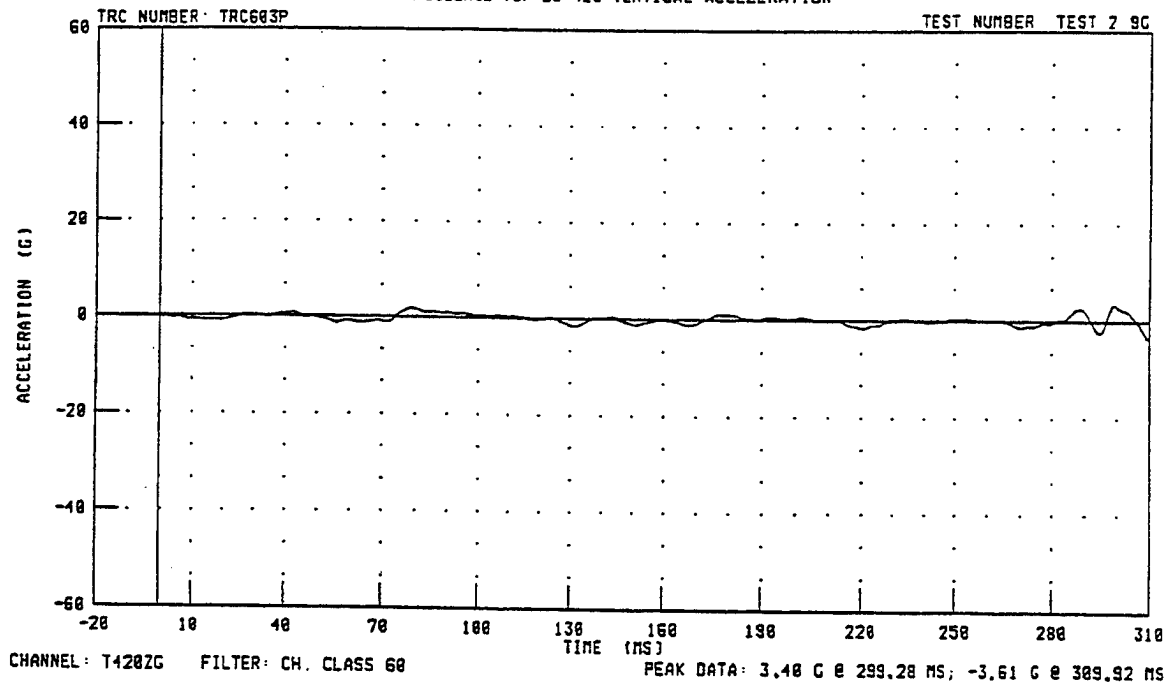
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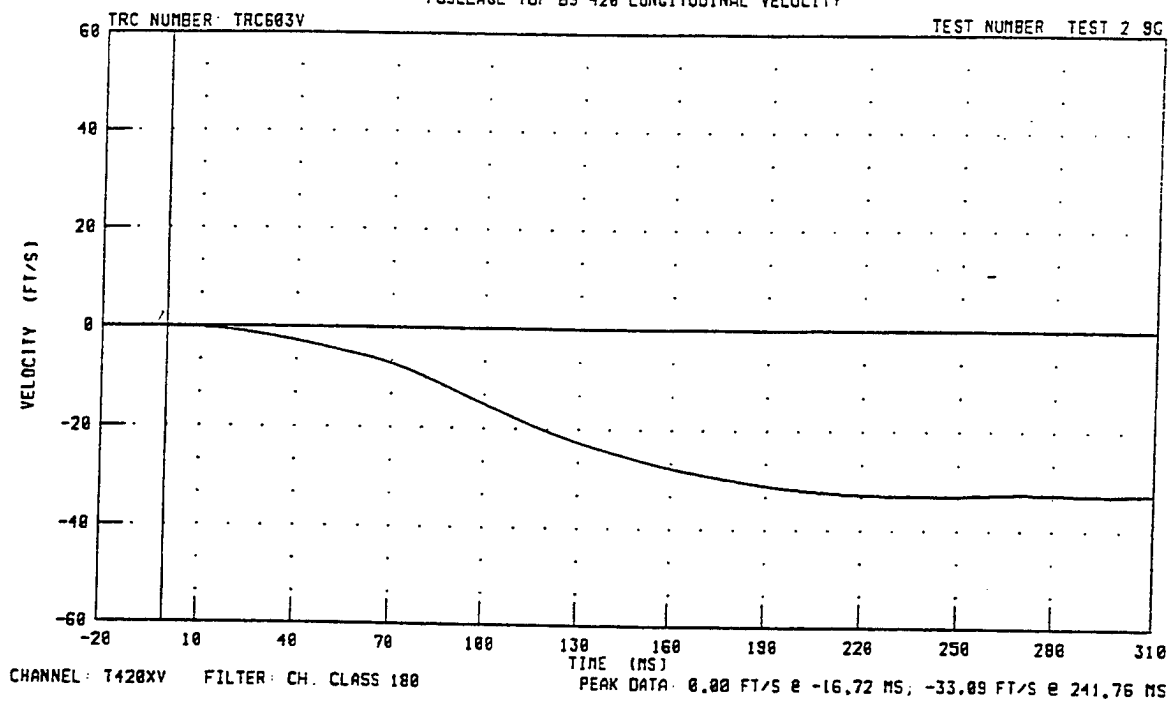
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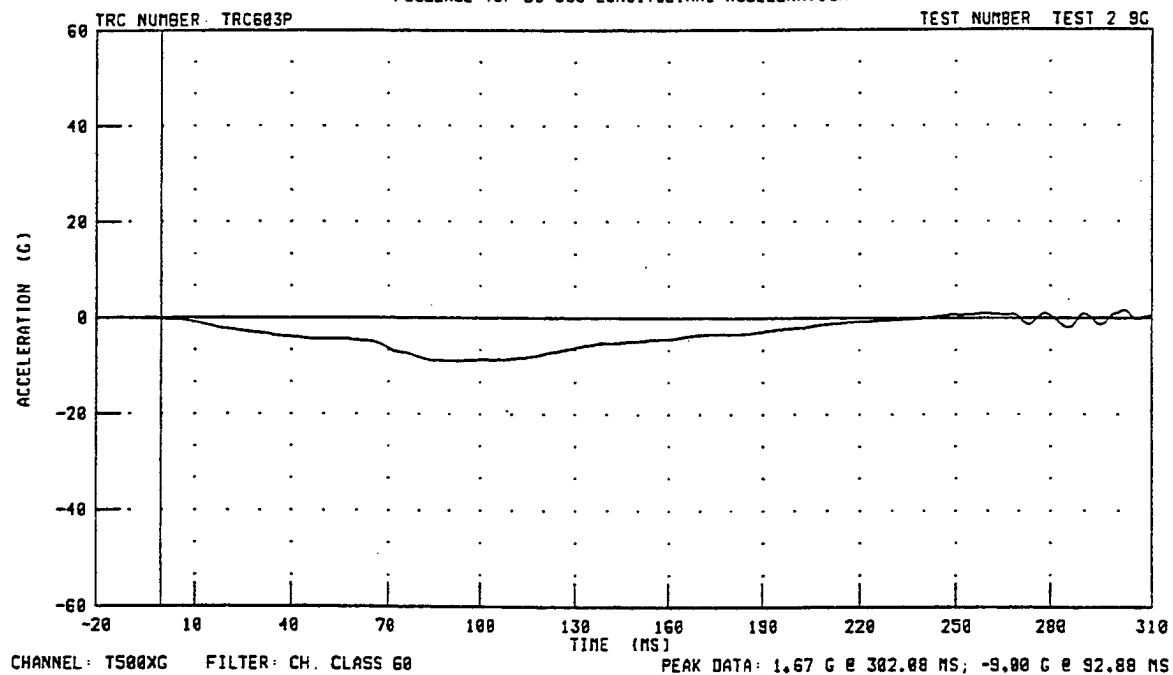
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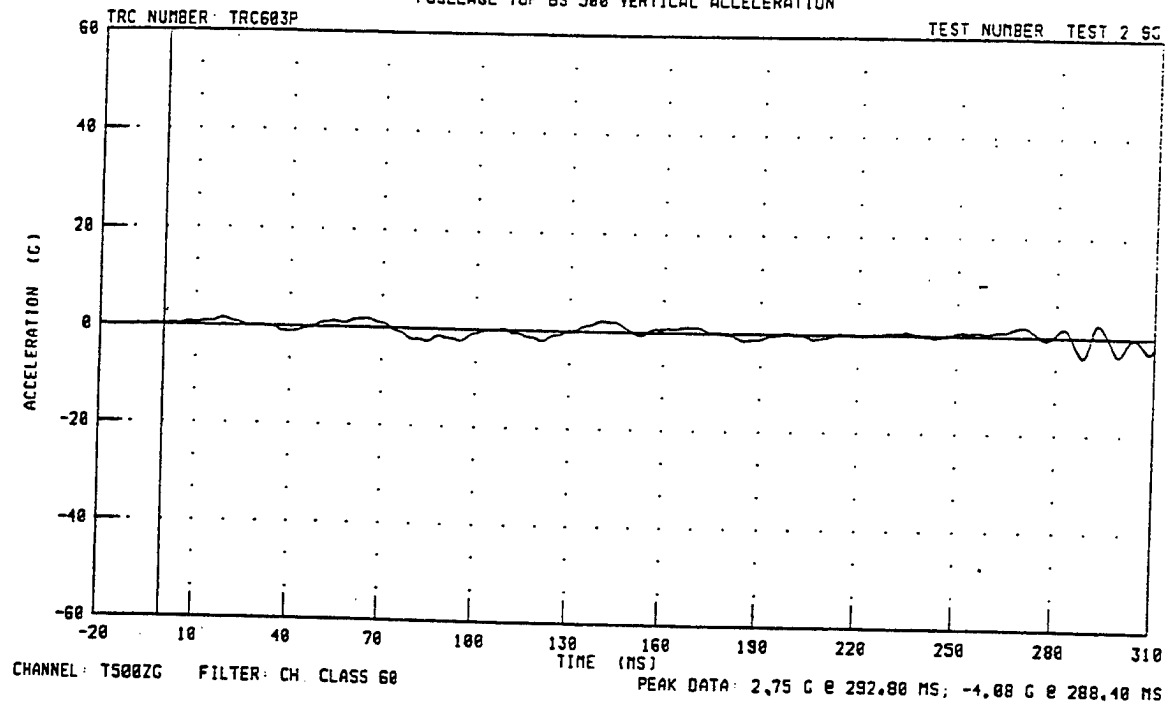
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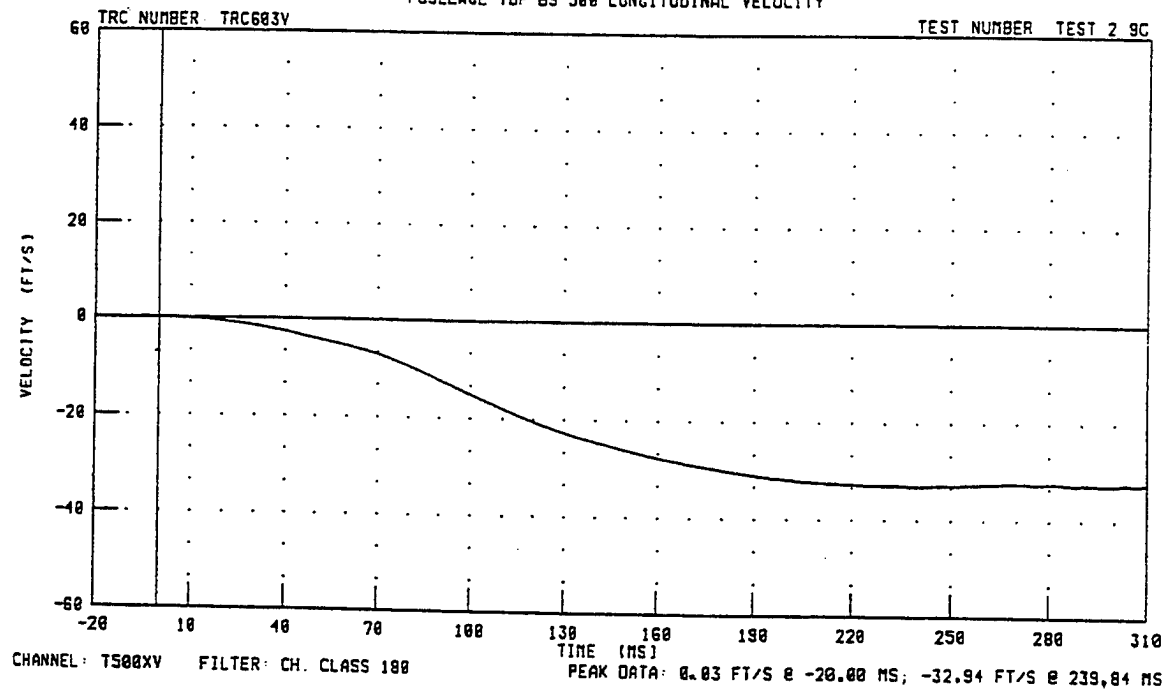
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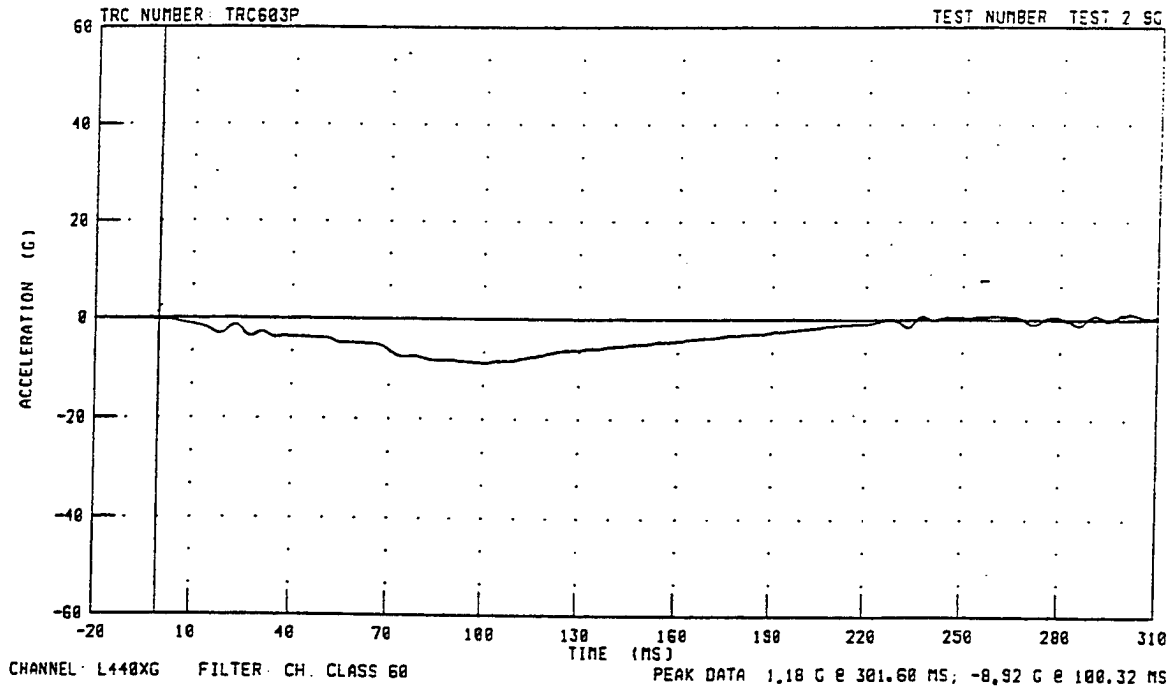
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FUSELAGE TOP BS 500 VERTICAL ACCELERATION



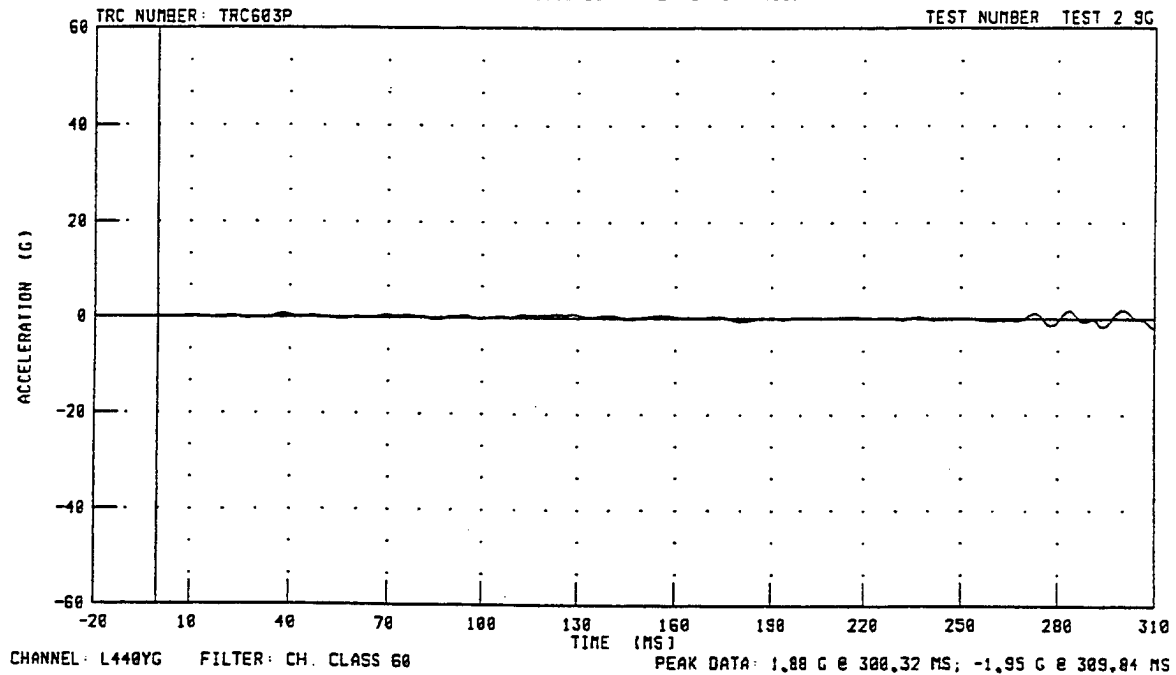
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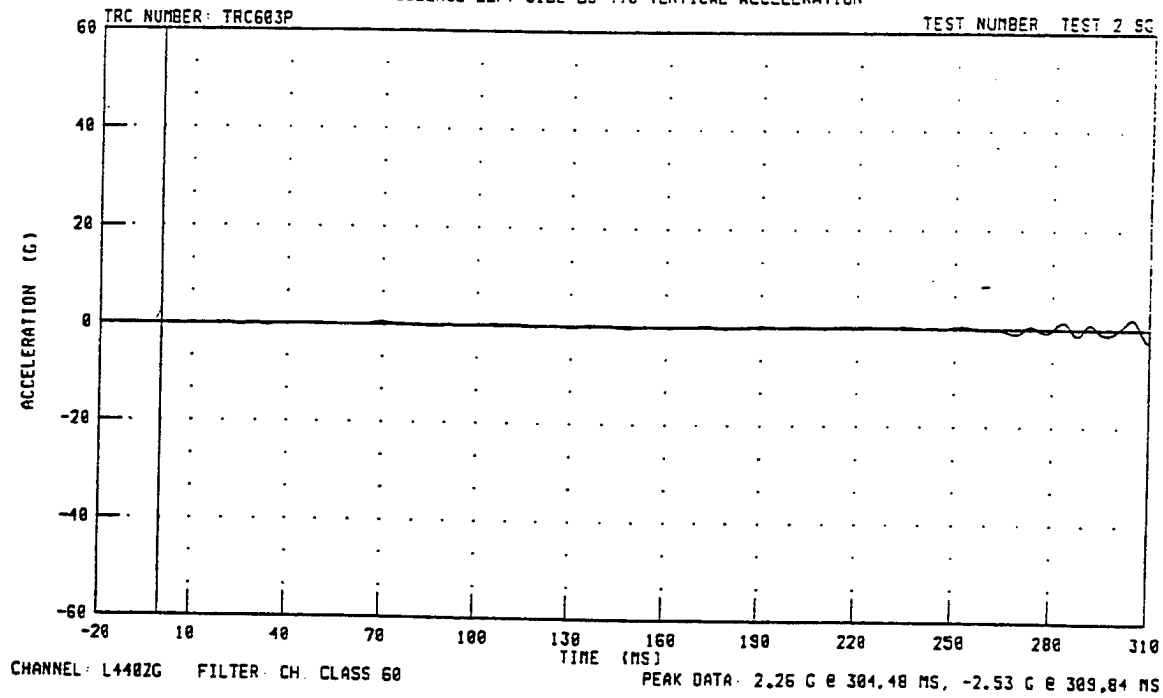
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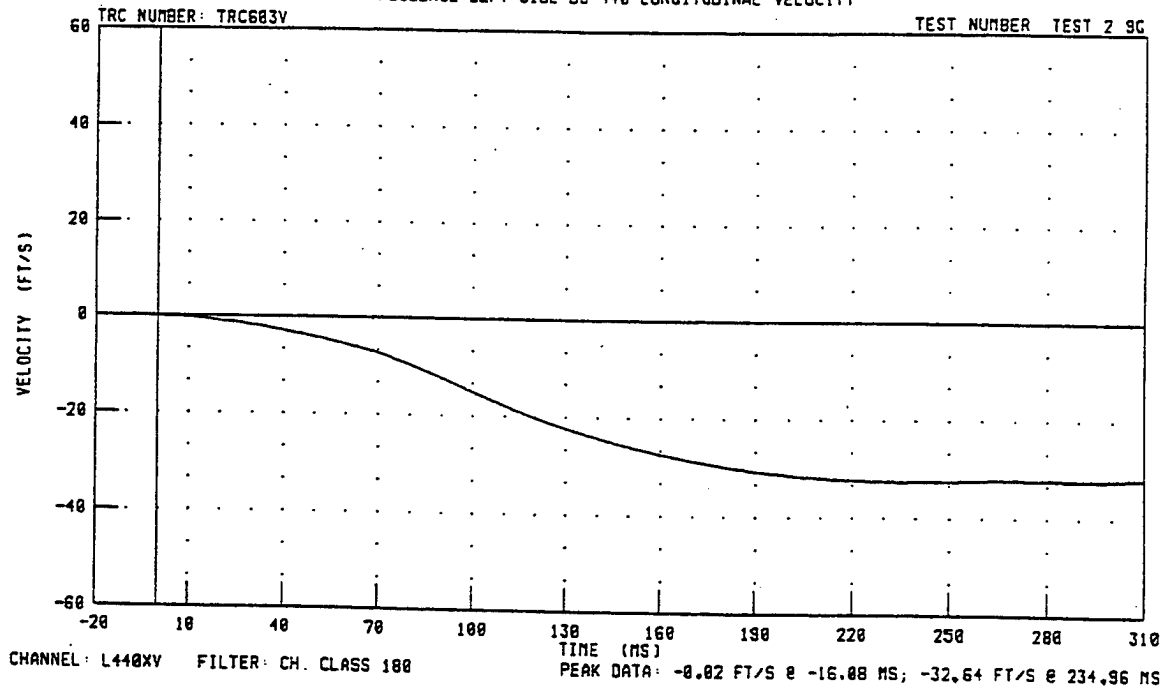
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FUSELAGE LEFT SIDE BS 440 LATERAL ACCELERATION



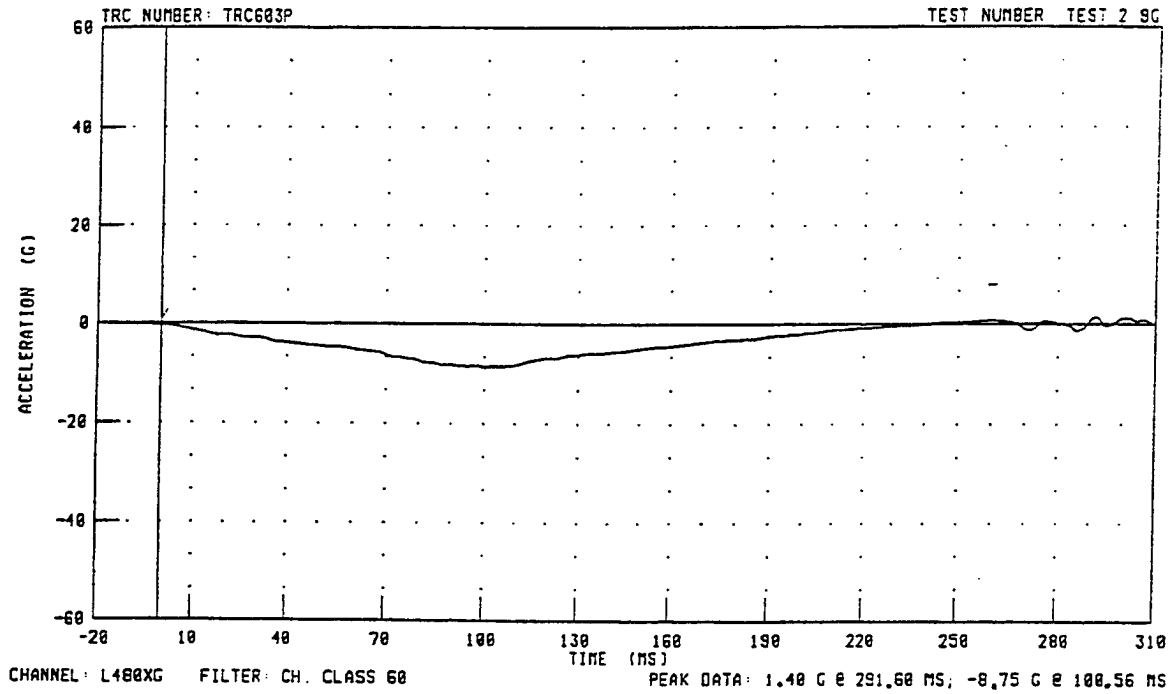
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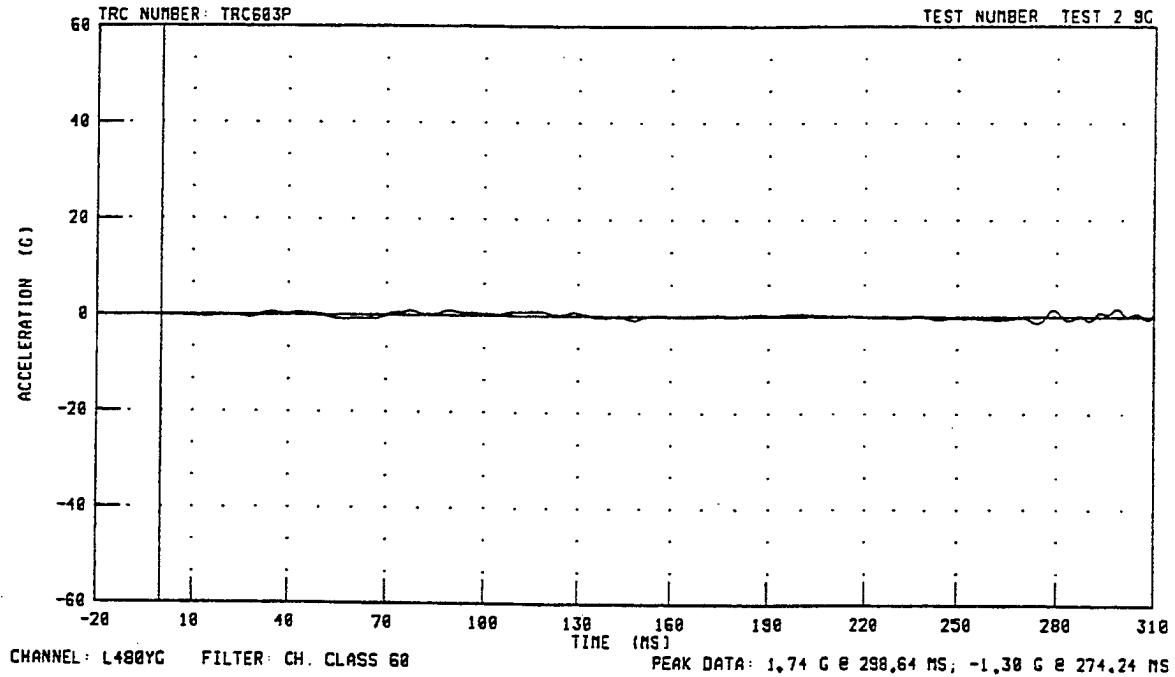
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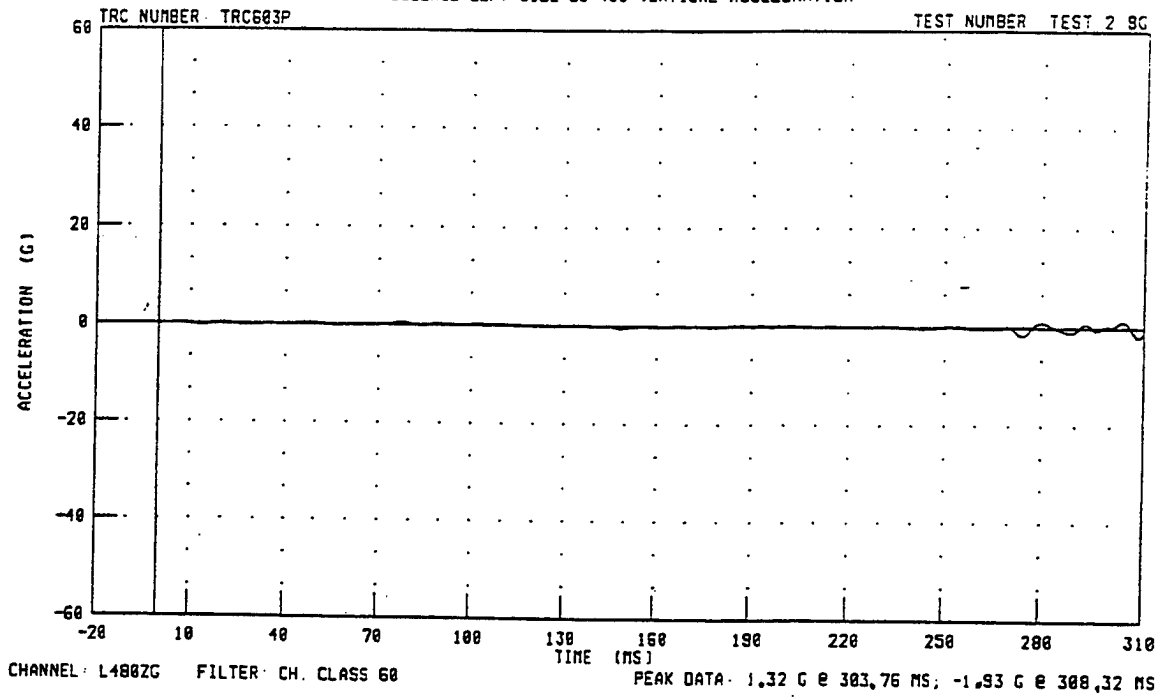
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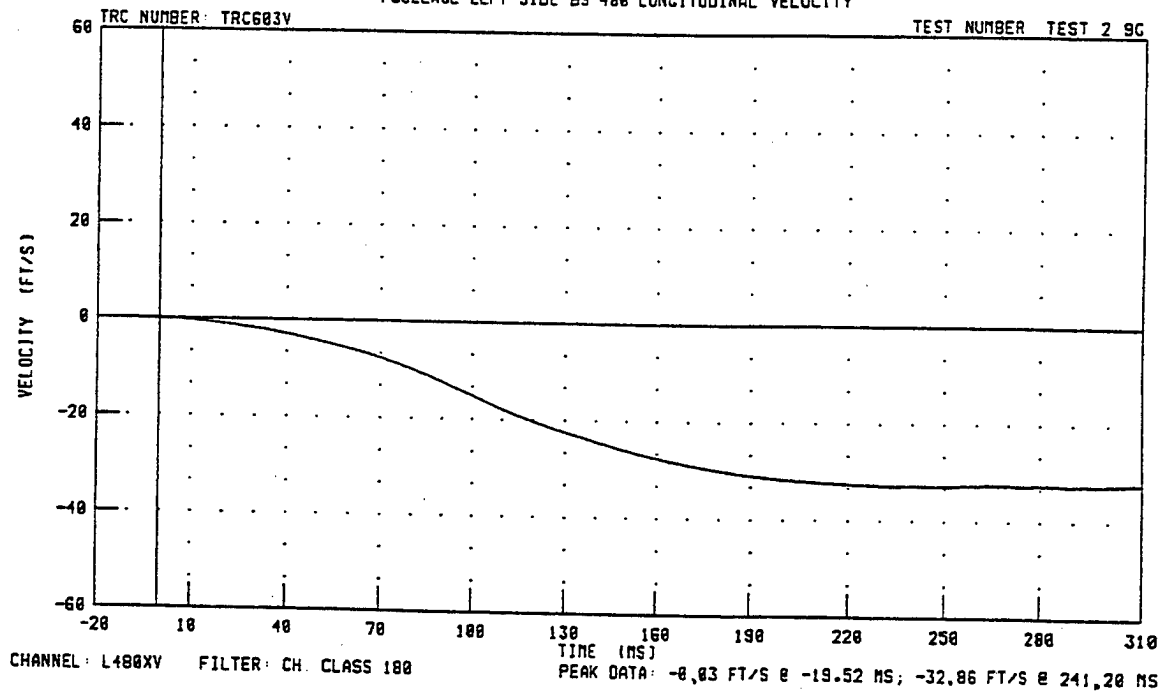
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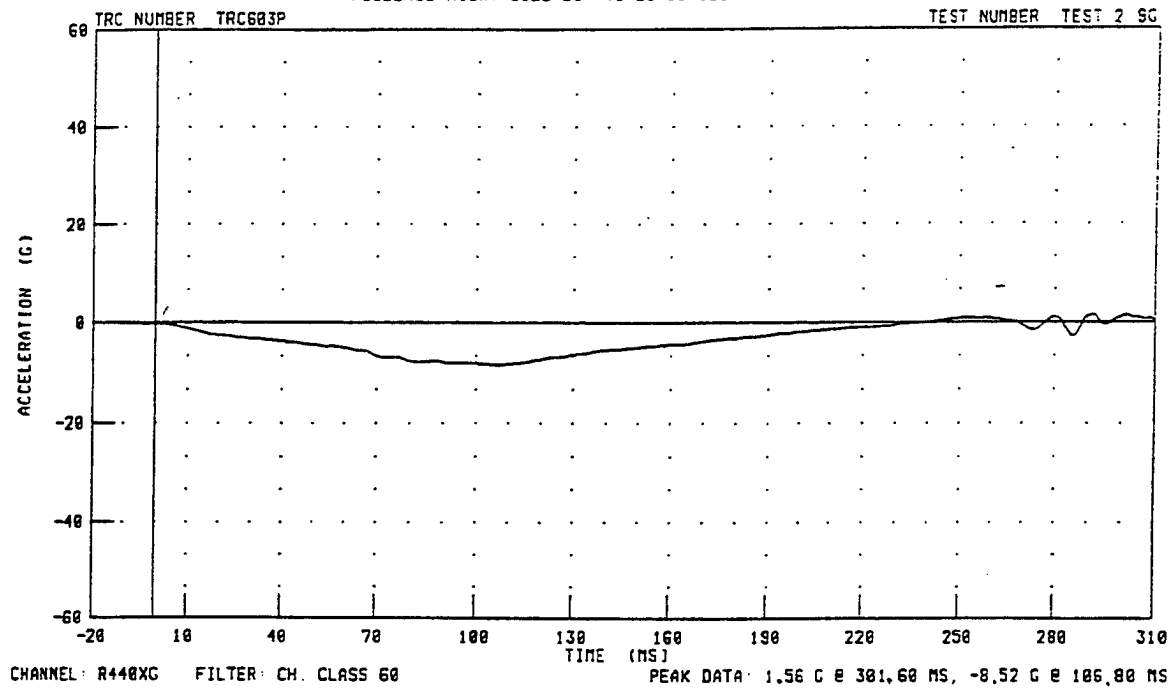
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FUSELAGE LEFT SIDE BS 480 VERTICAL ACCELERATION



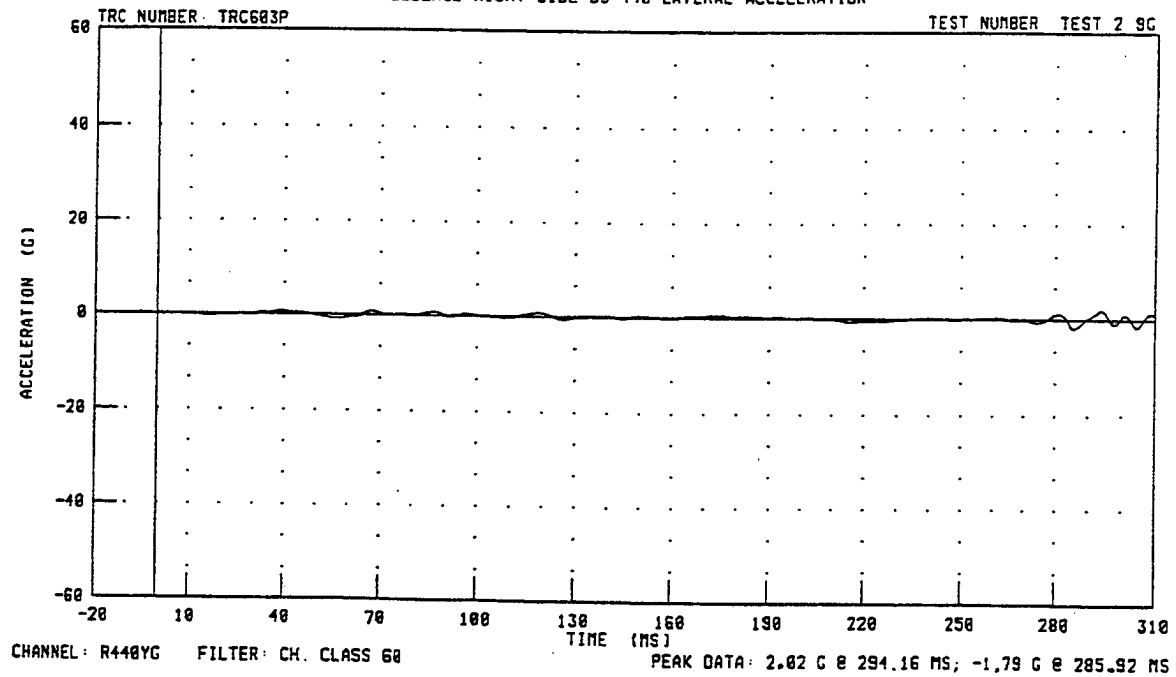
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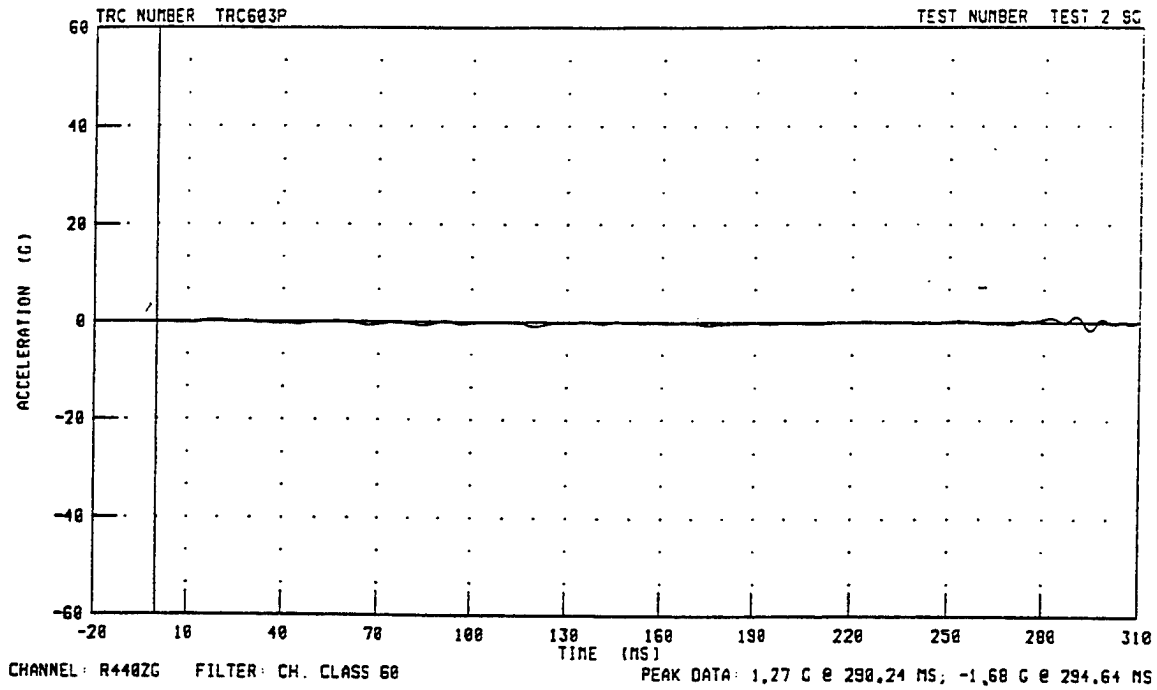
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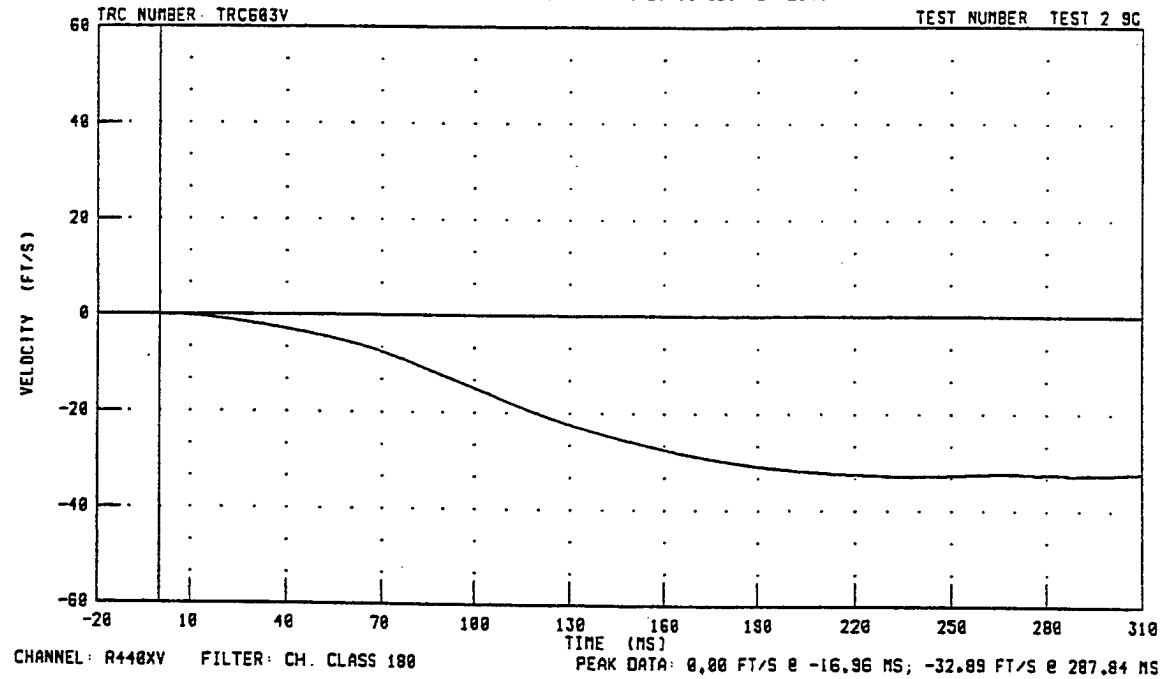
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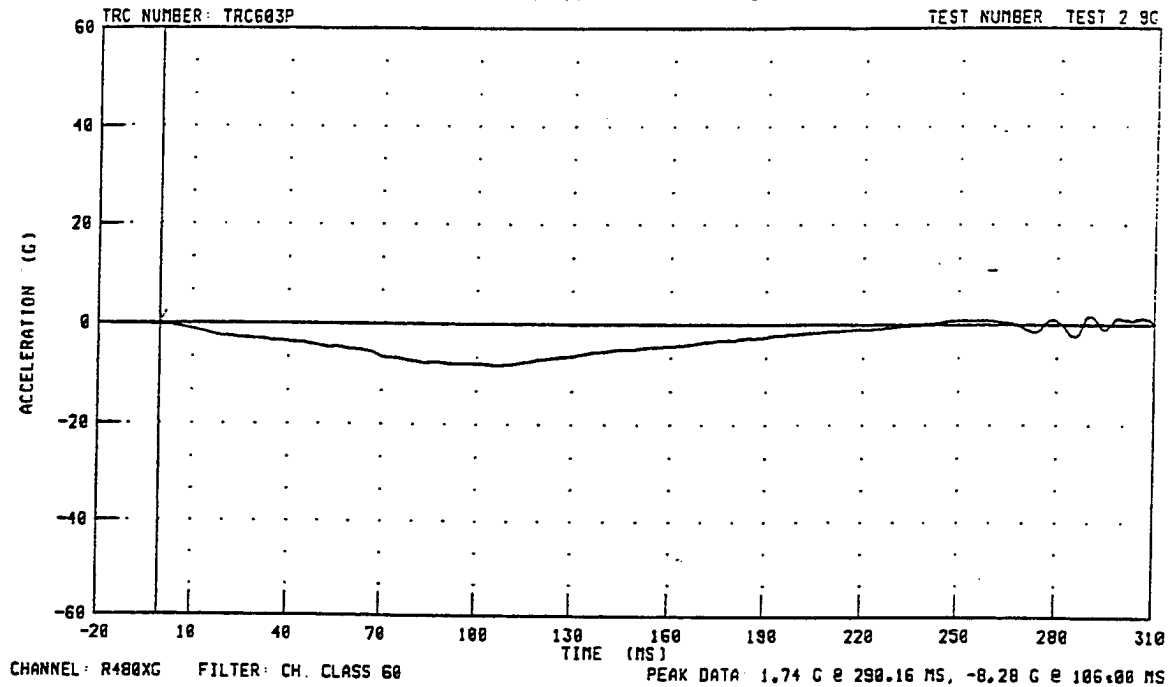
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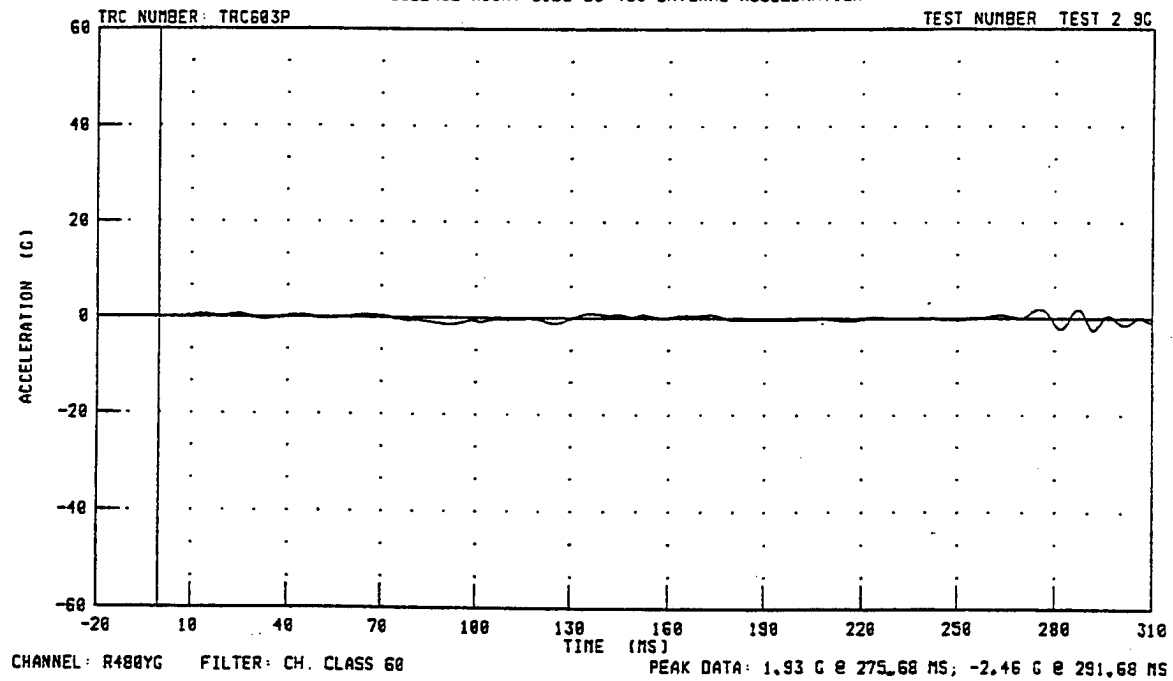
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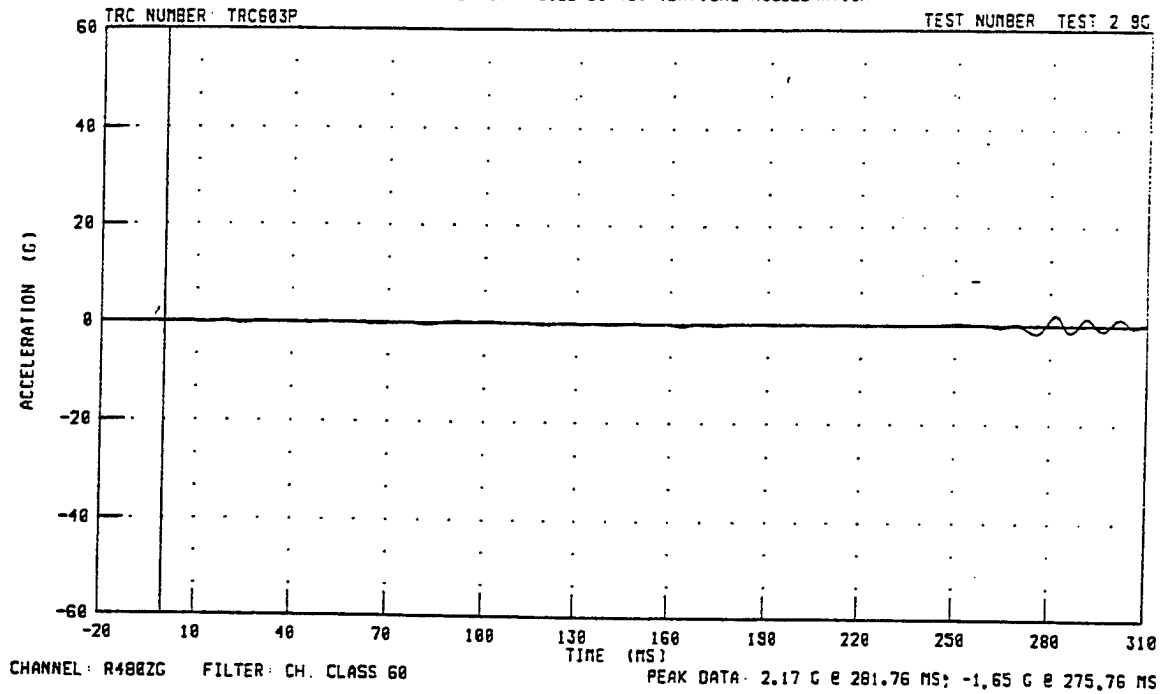
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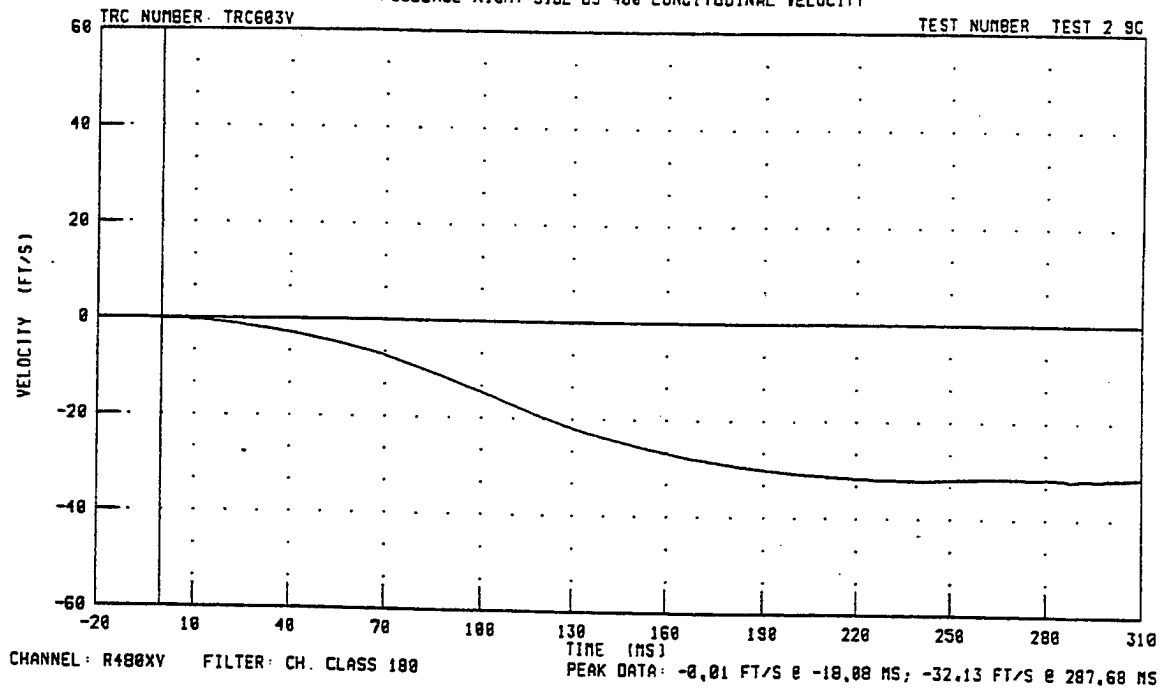
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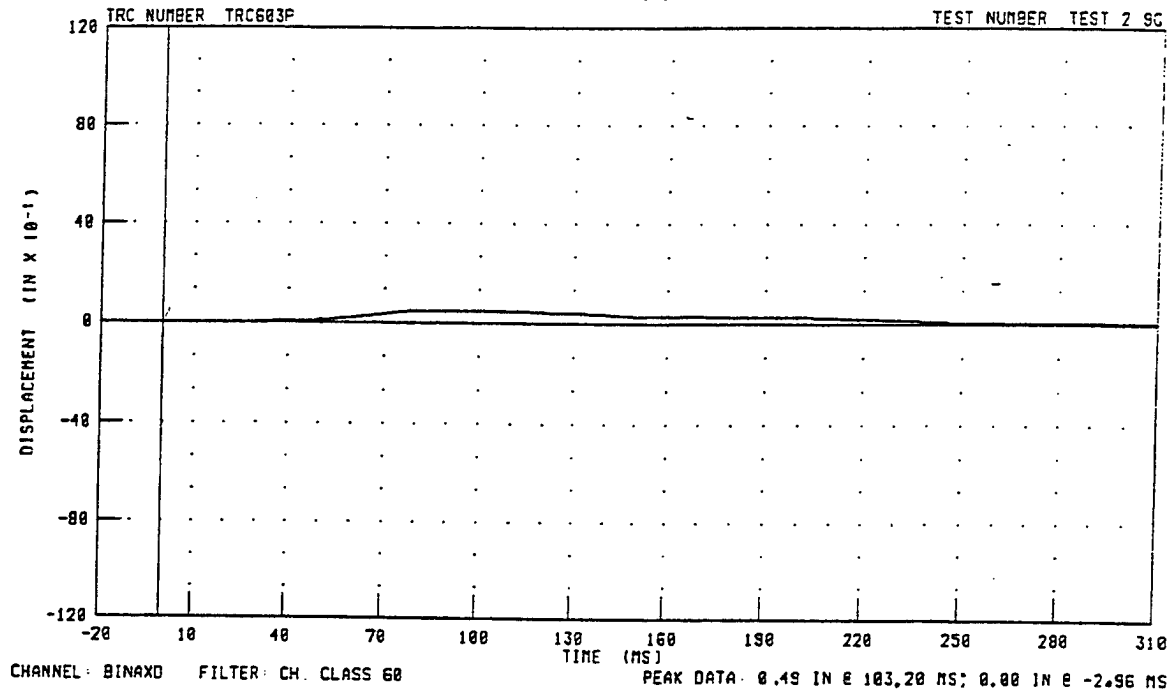
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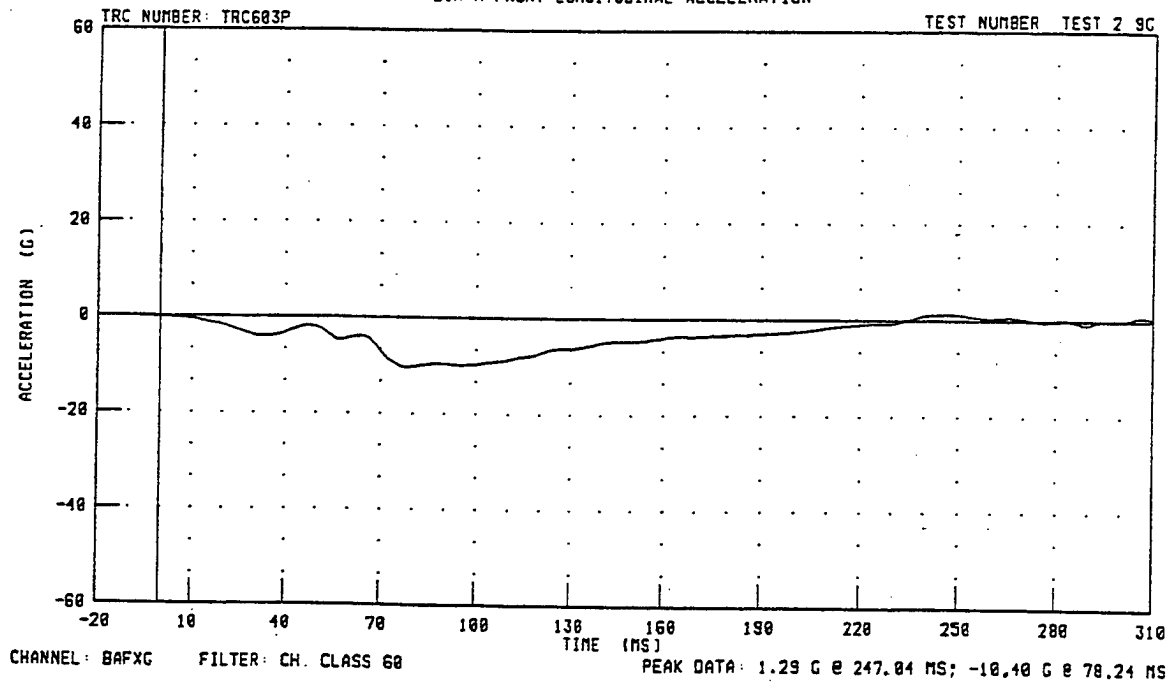
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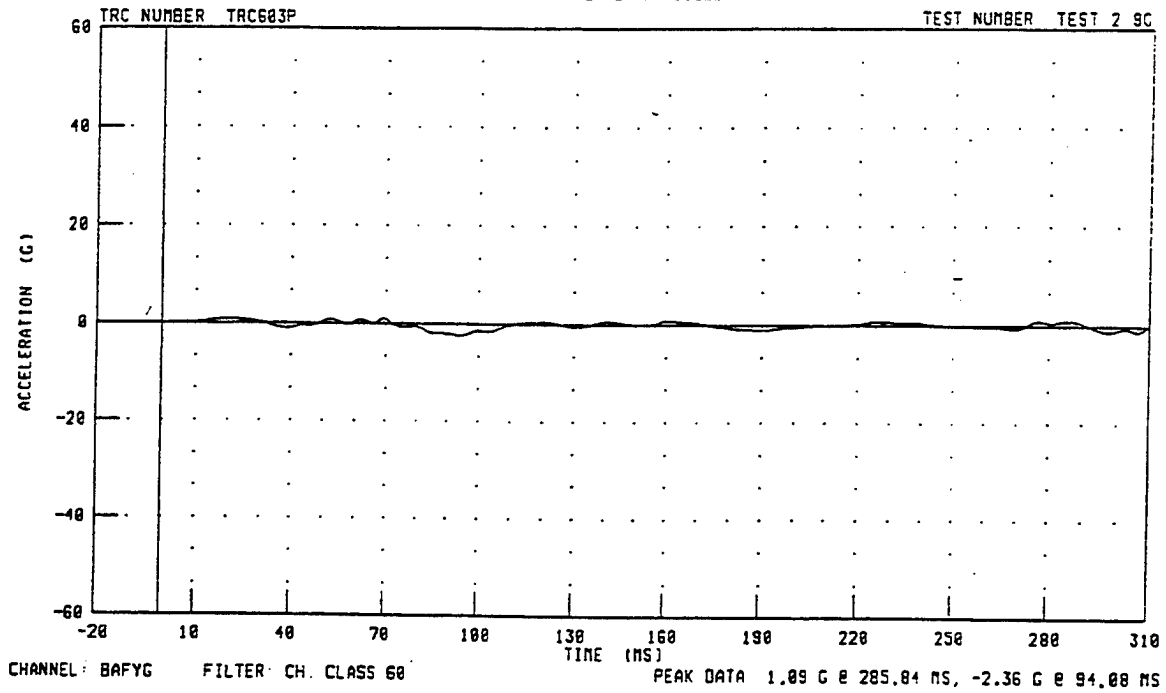
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BIN A LONGITUDINAL DISPLACEMENT



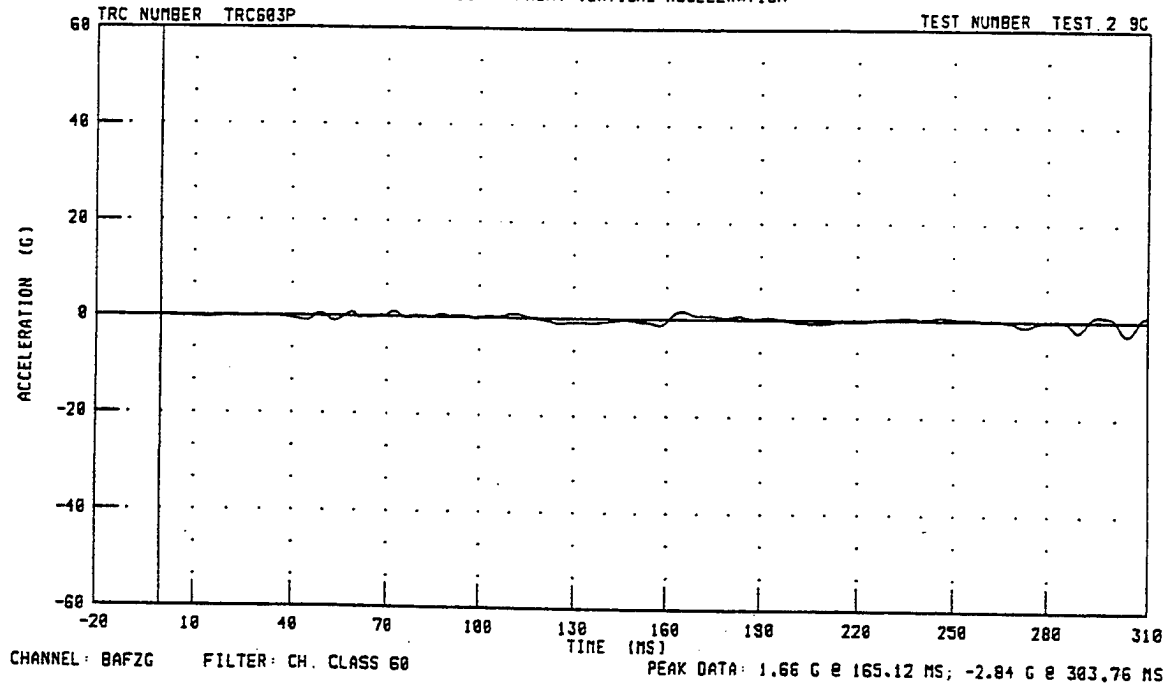
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BIN A FRONT LONGITUDINAL ACCELERATION



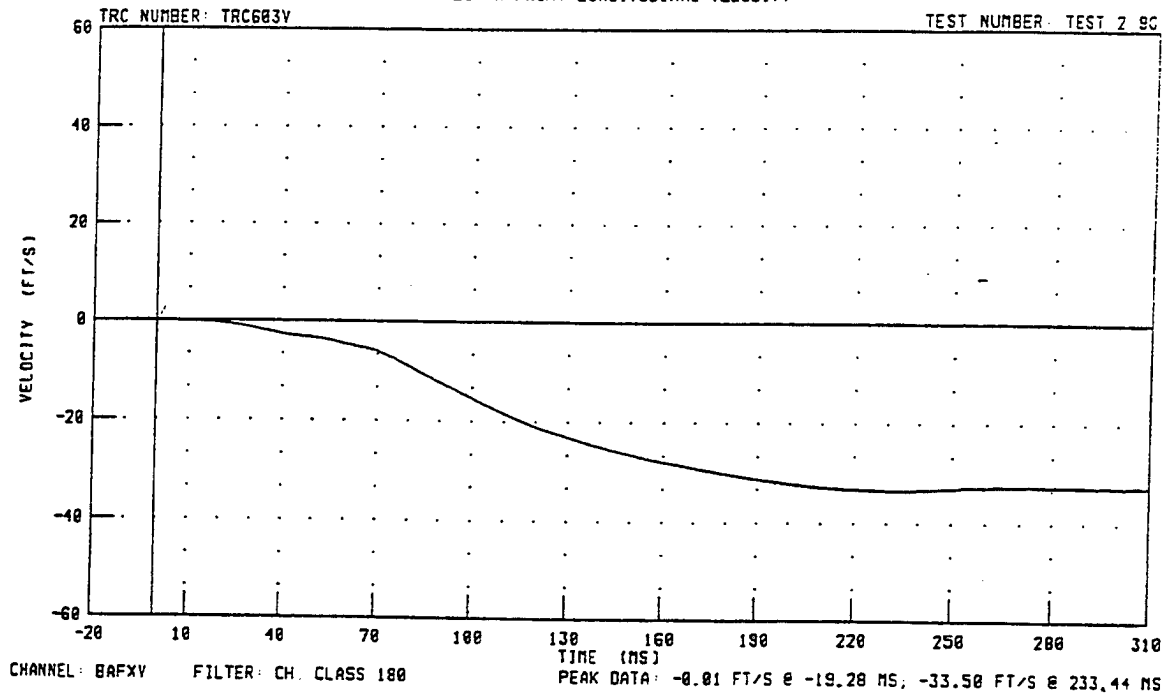
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BIN A FRONT LATERAL ACCELERATION



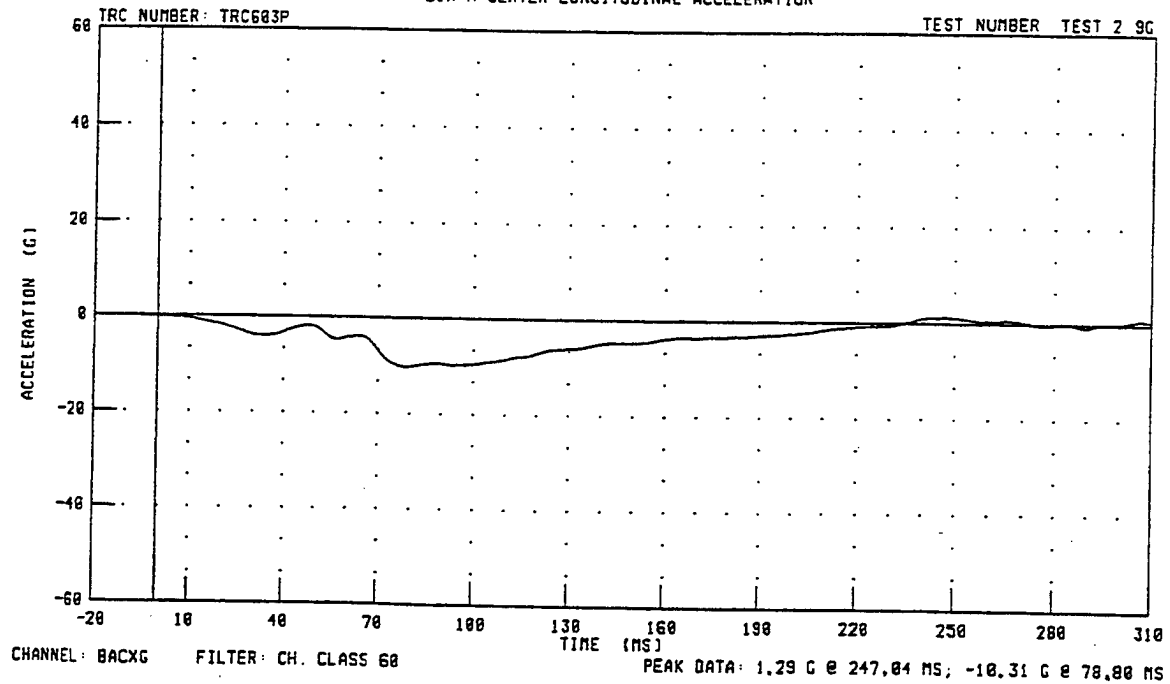
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BIN A FRONT VERTICAL ACCELERATION



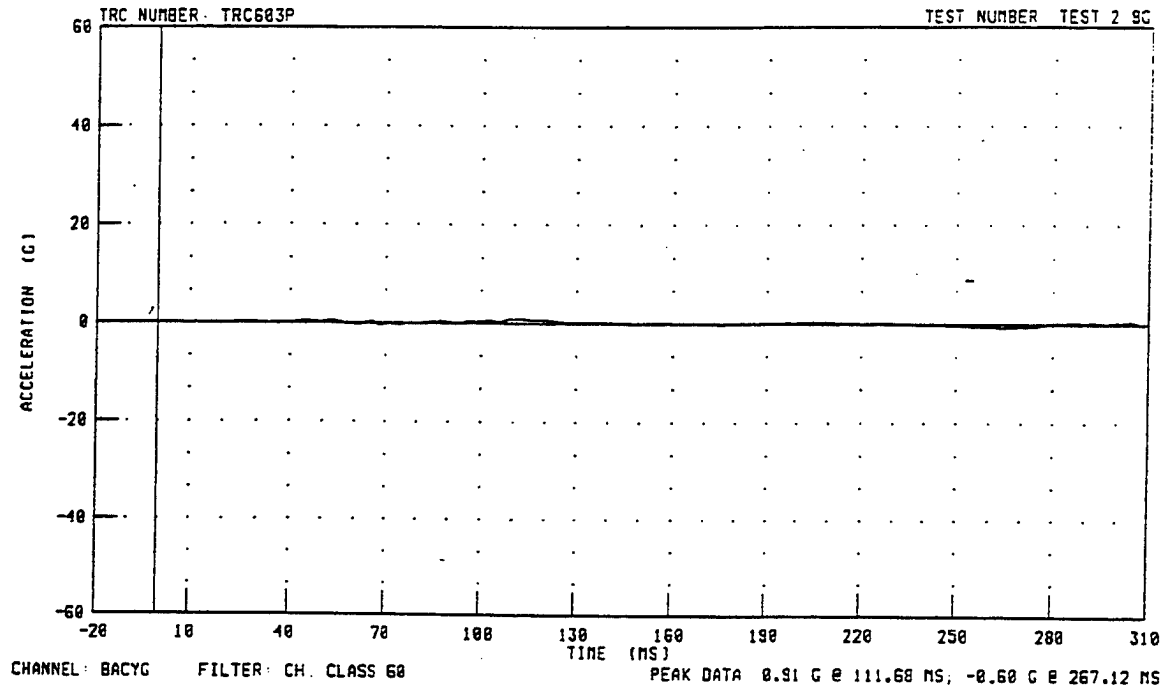
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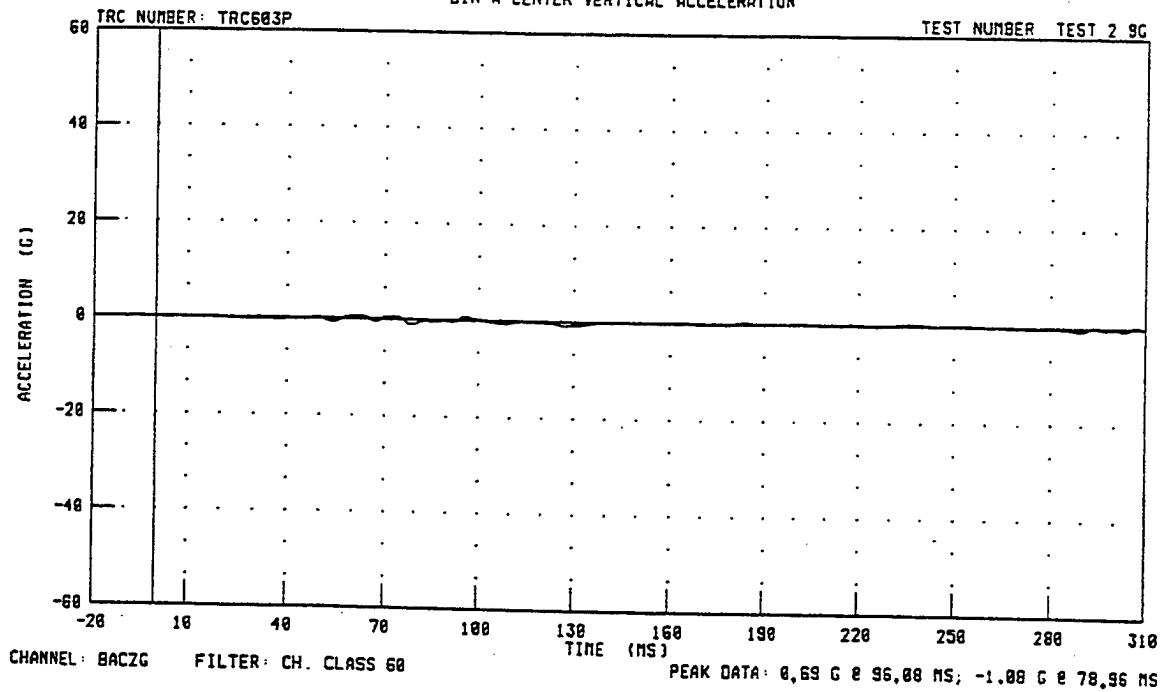
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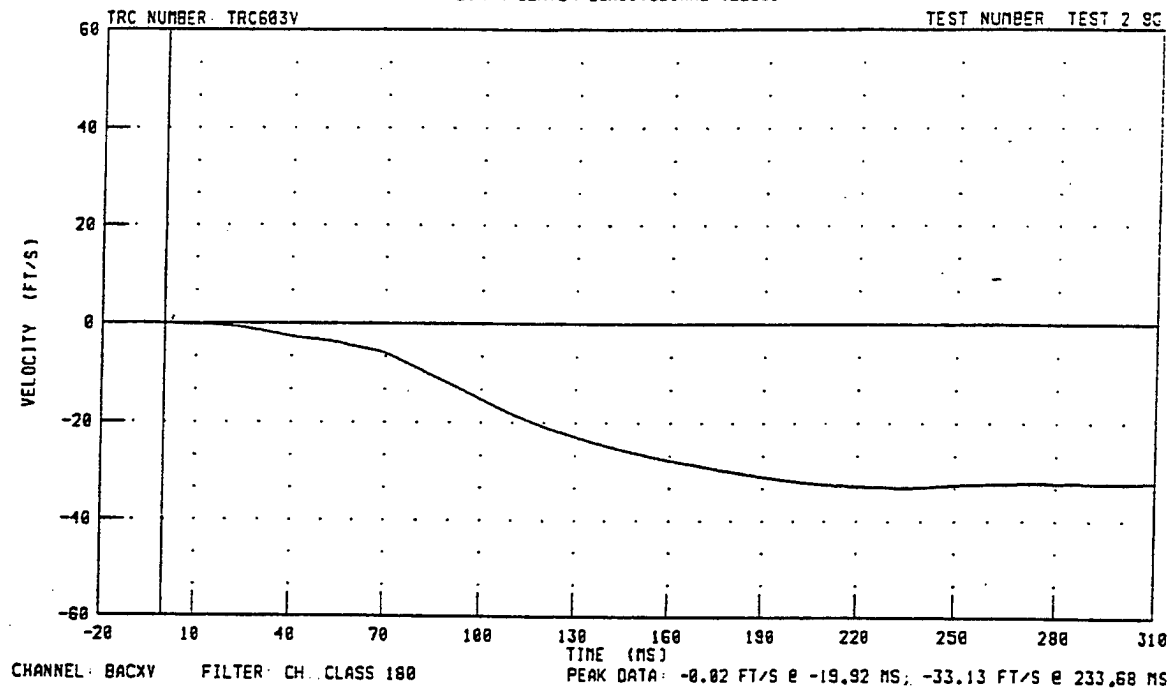
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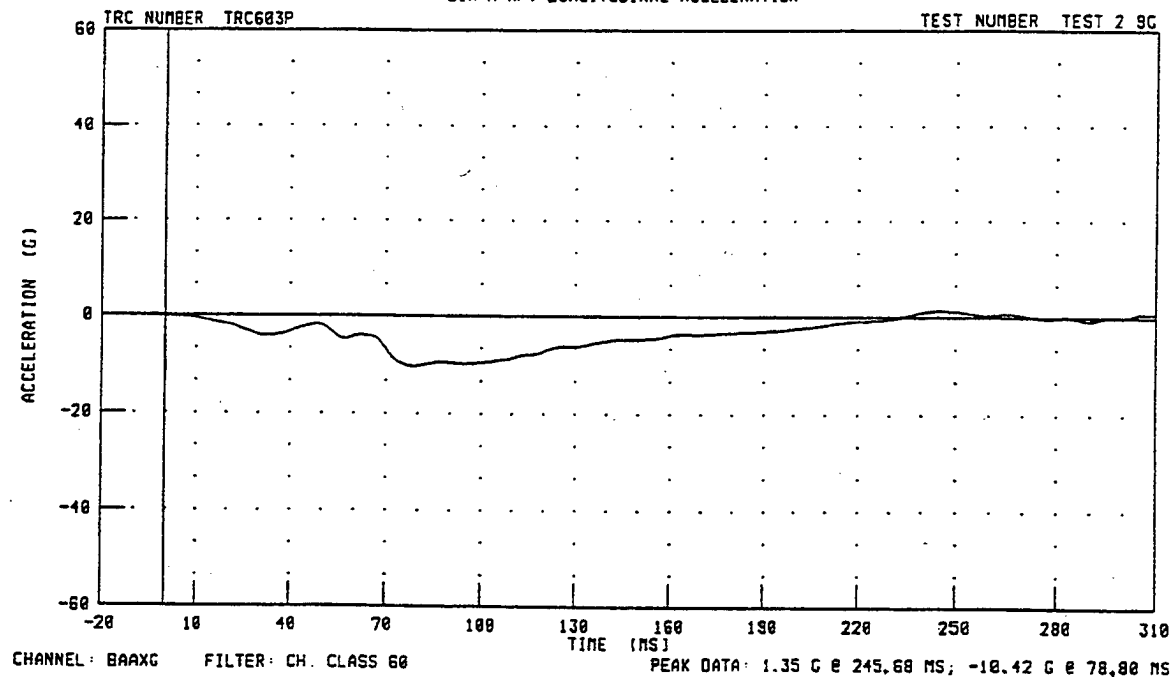
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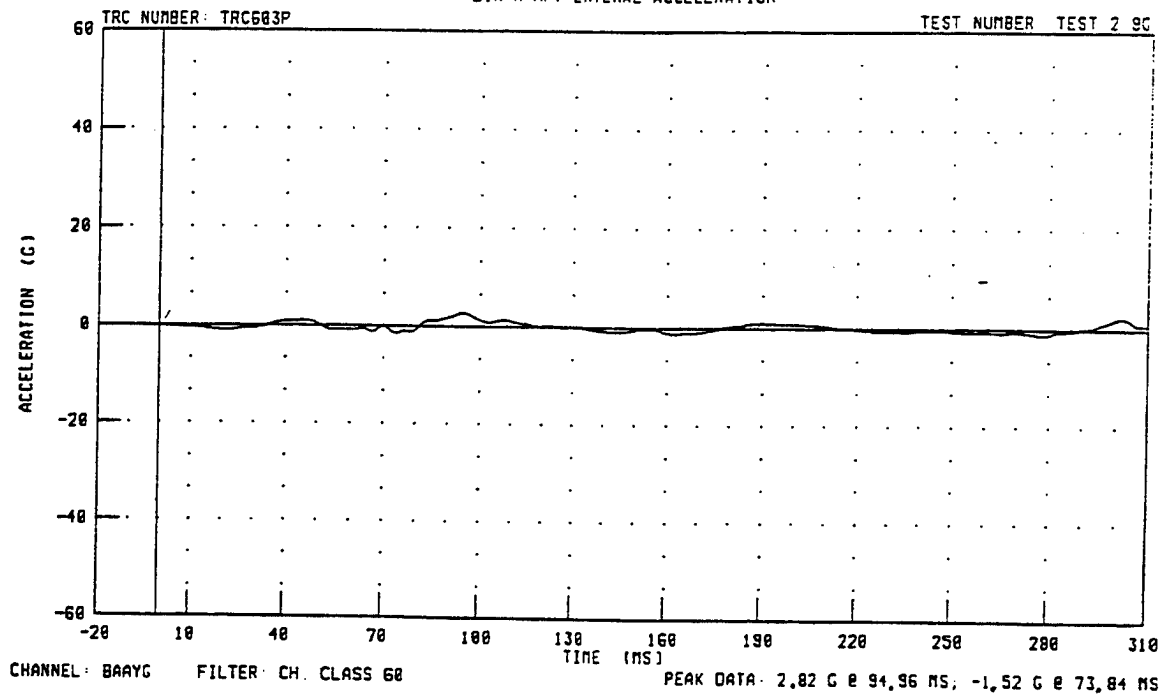
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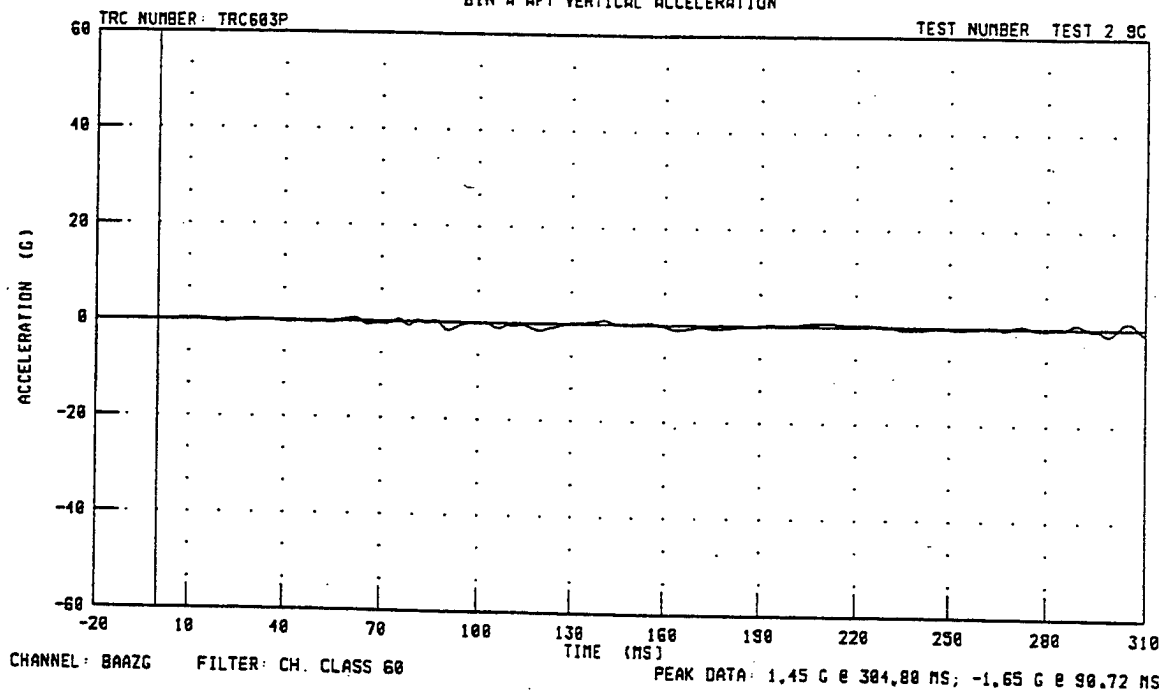
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BIN A AFT LONGITUDINAL ACCELERATION



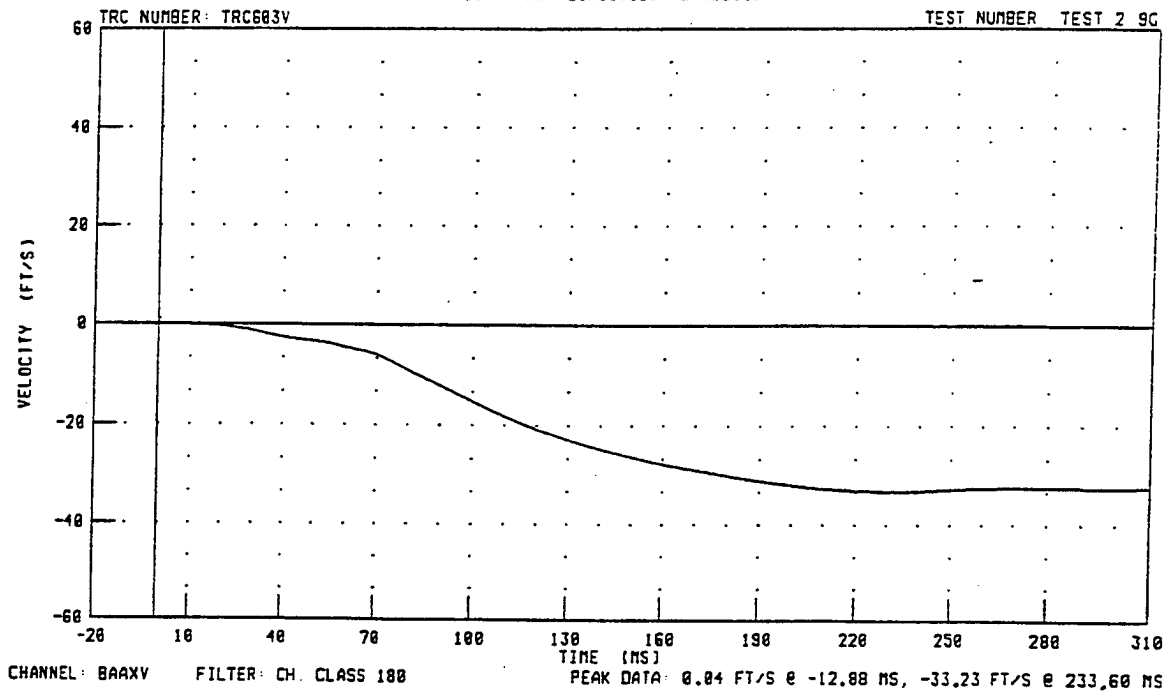
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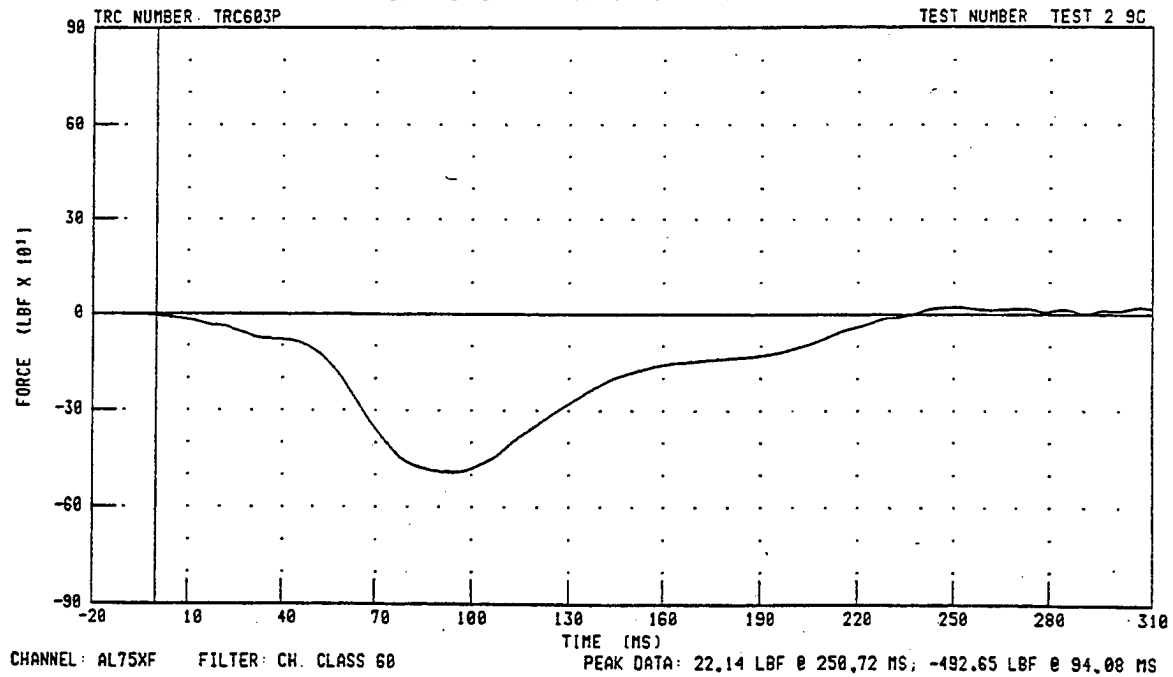
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BIN A AFT VERTICAL ACCELERATION



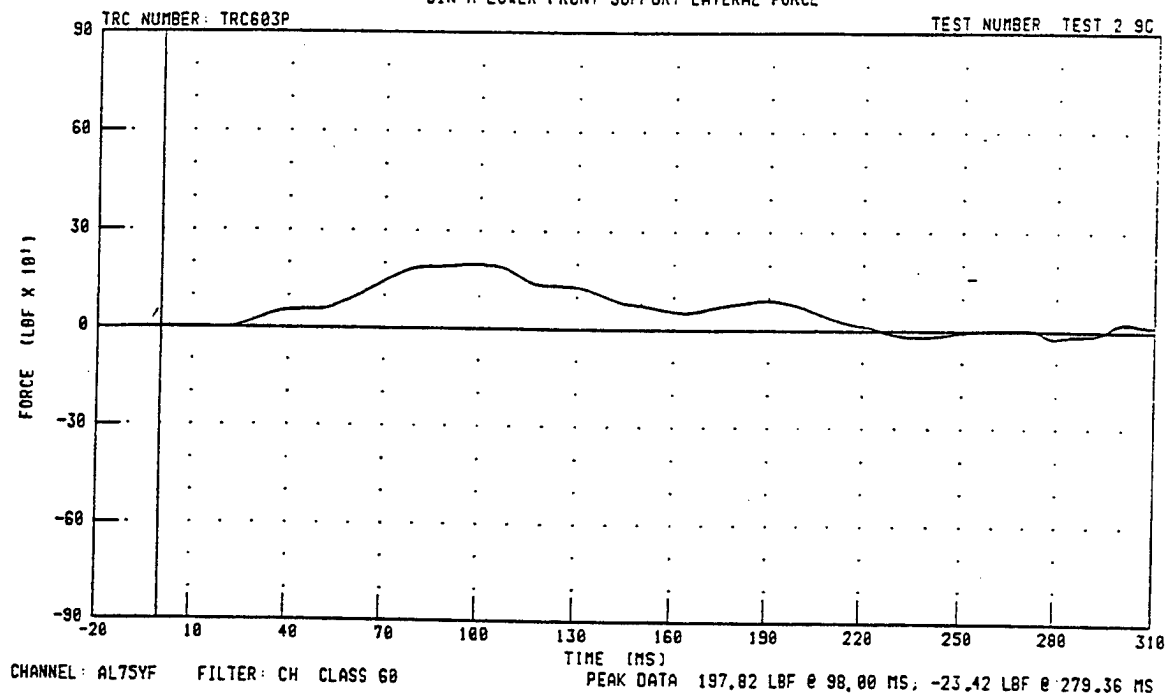
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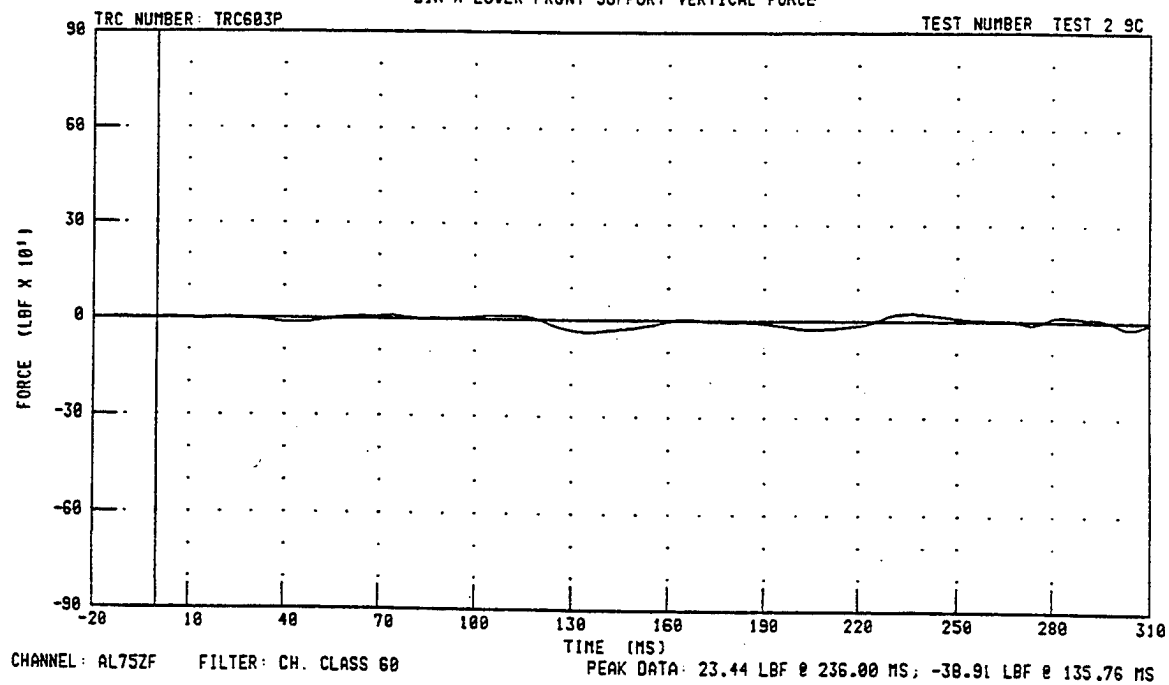
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BIN A LOWER FRONT SUPPORT LONGITUDINAL FORCE



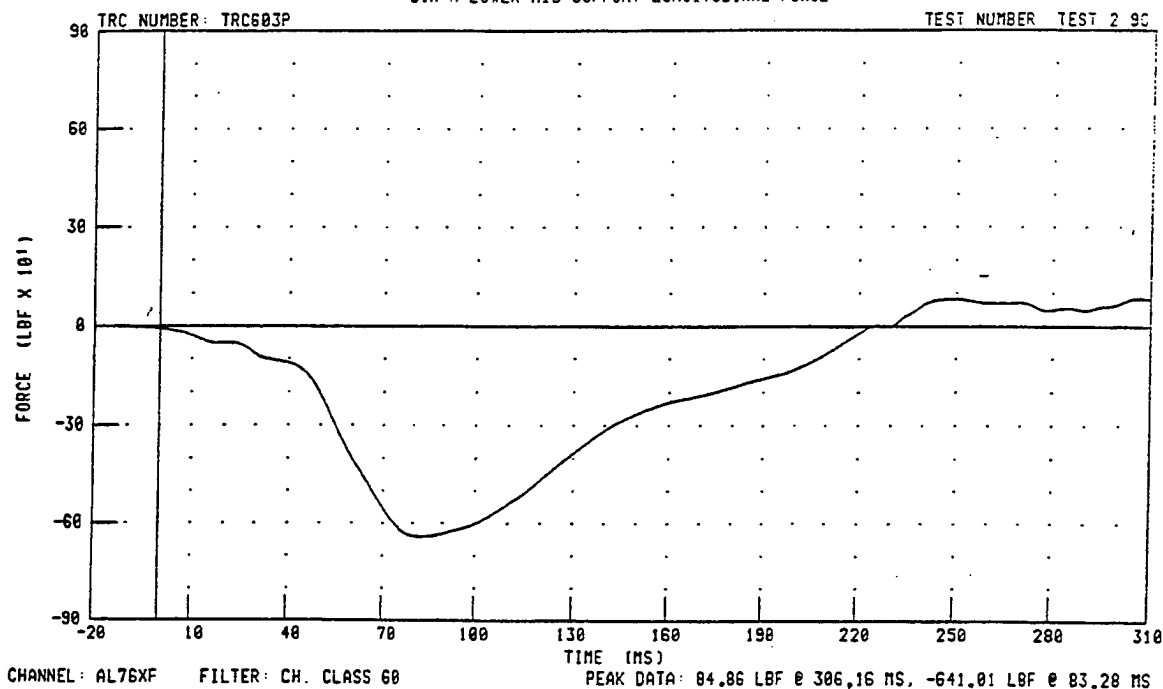
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BIN A LOWER FRONT SUPPORT LATERAL FORCE



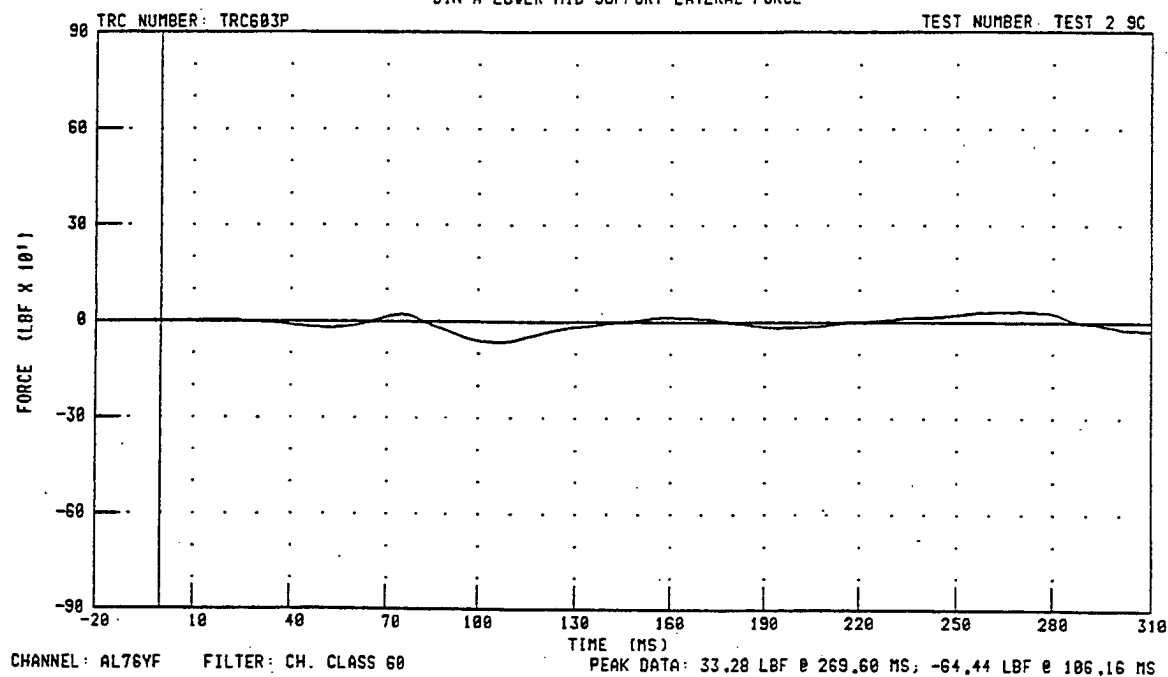
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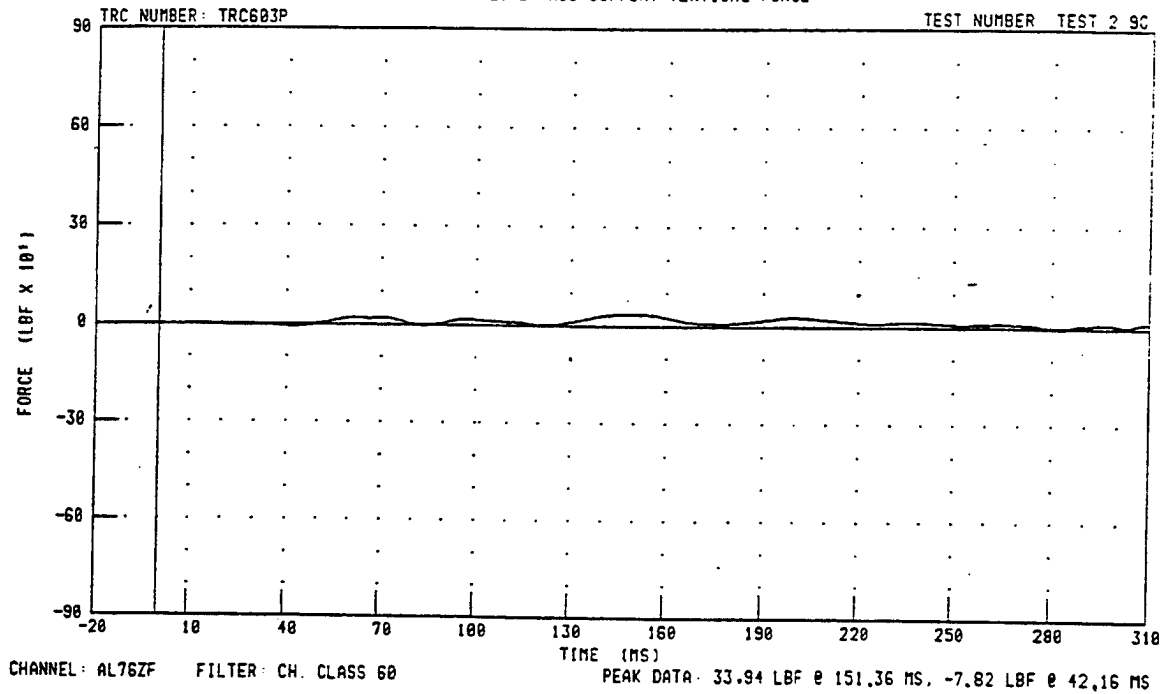
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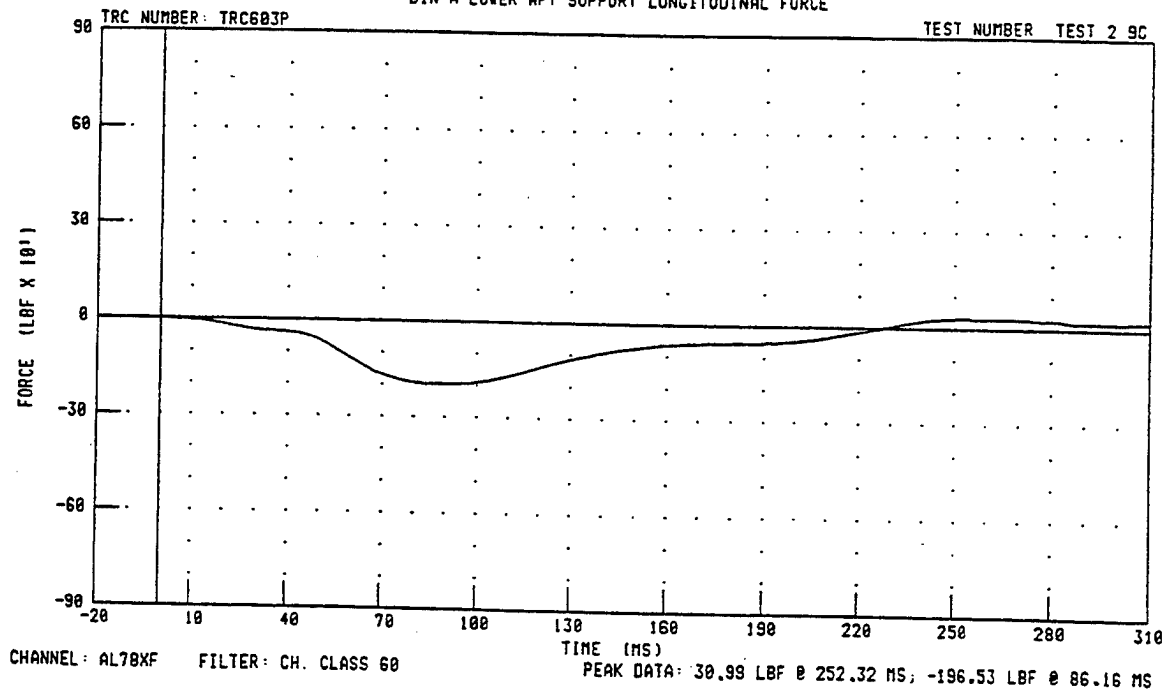
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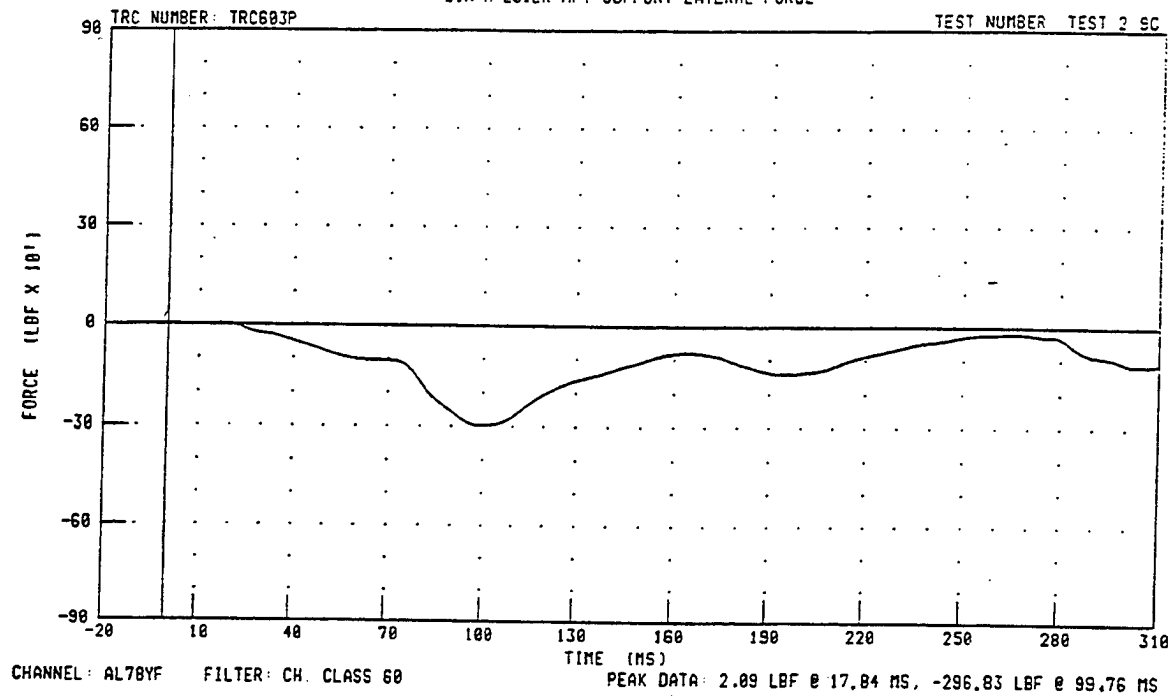
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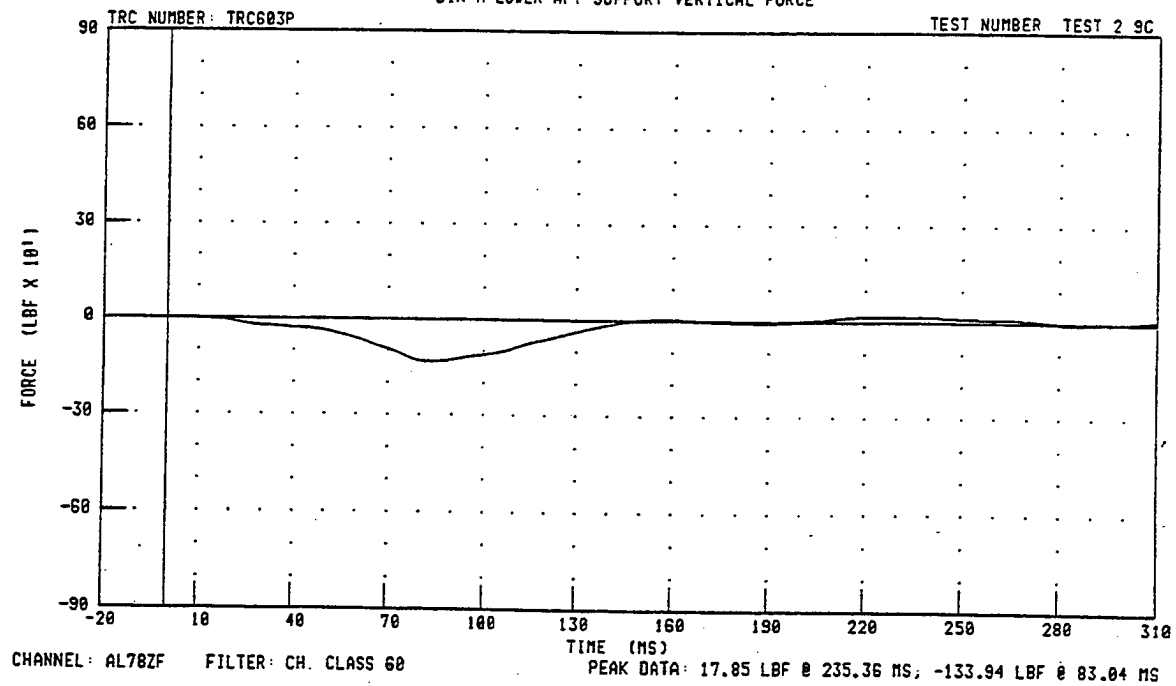
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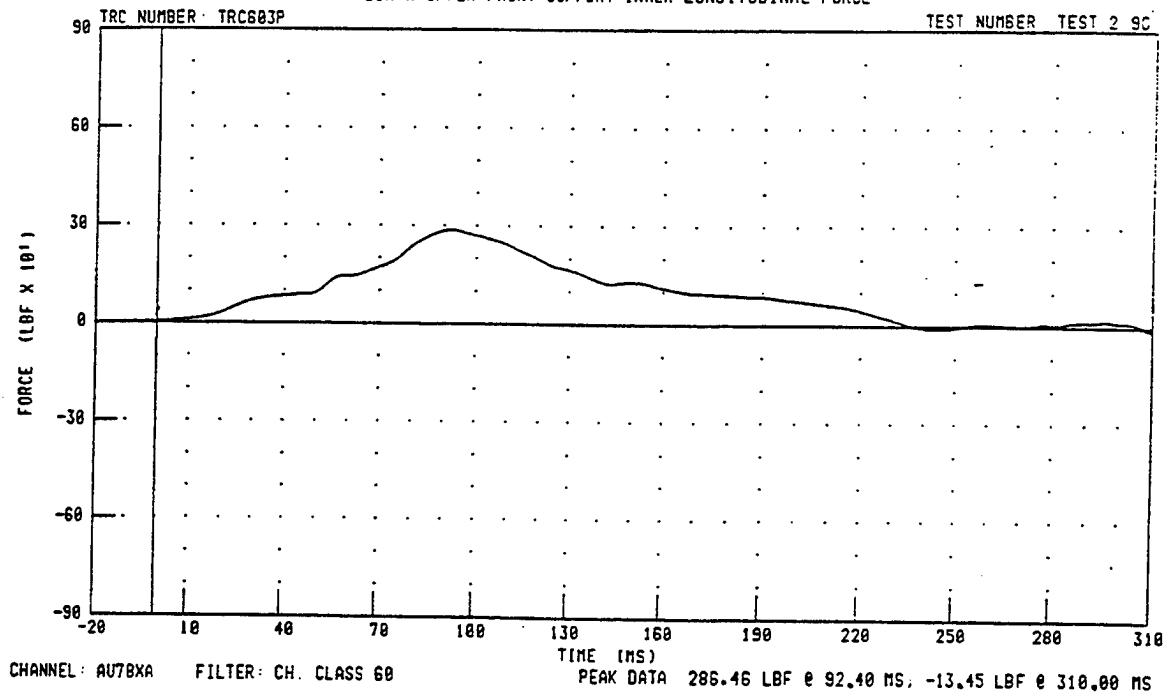
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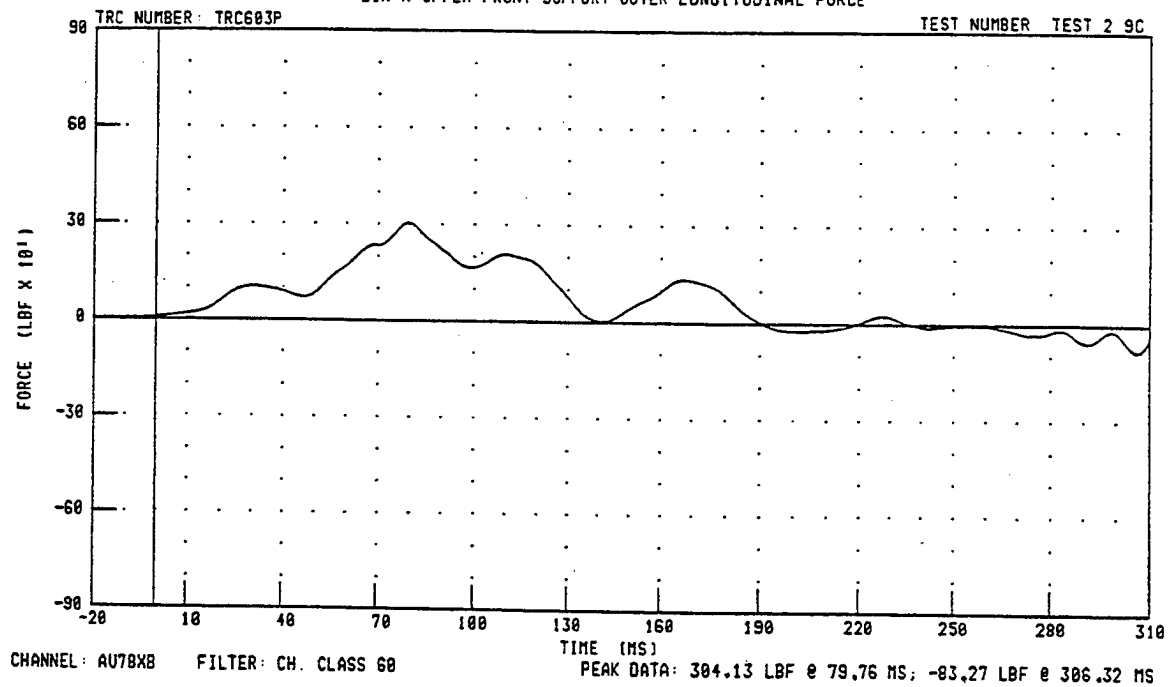
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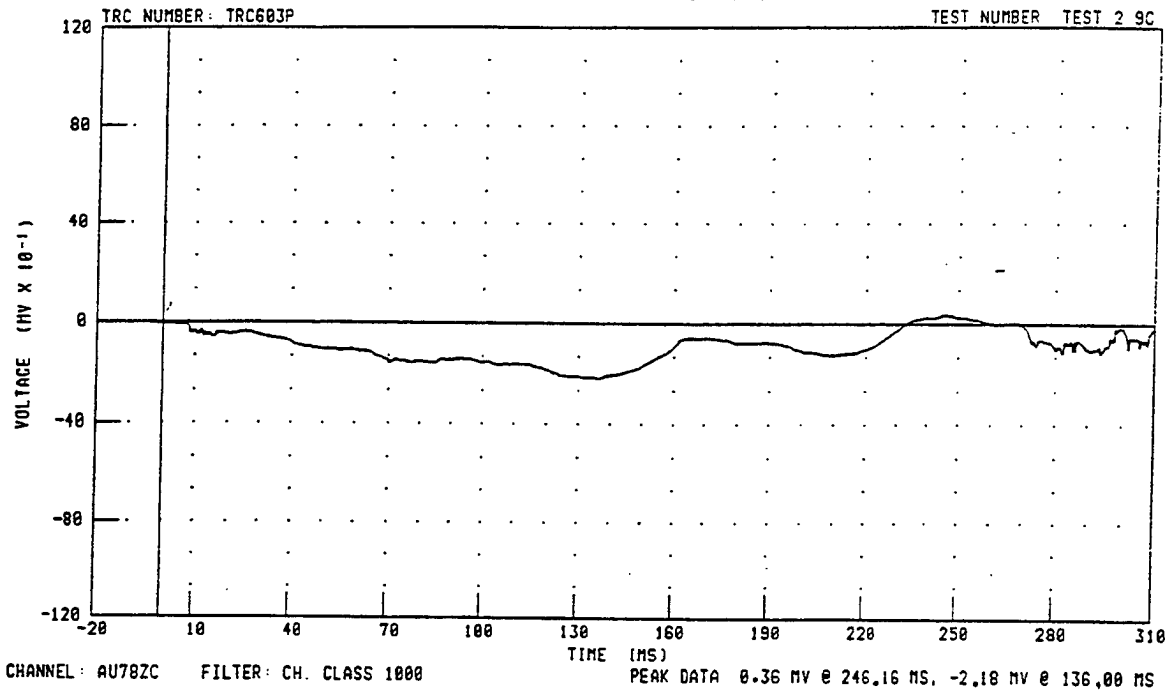
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BIN A UPPER FRONT SUPPORT INNER LONGITUDINAL FORCE



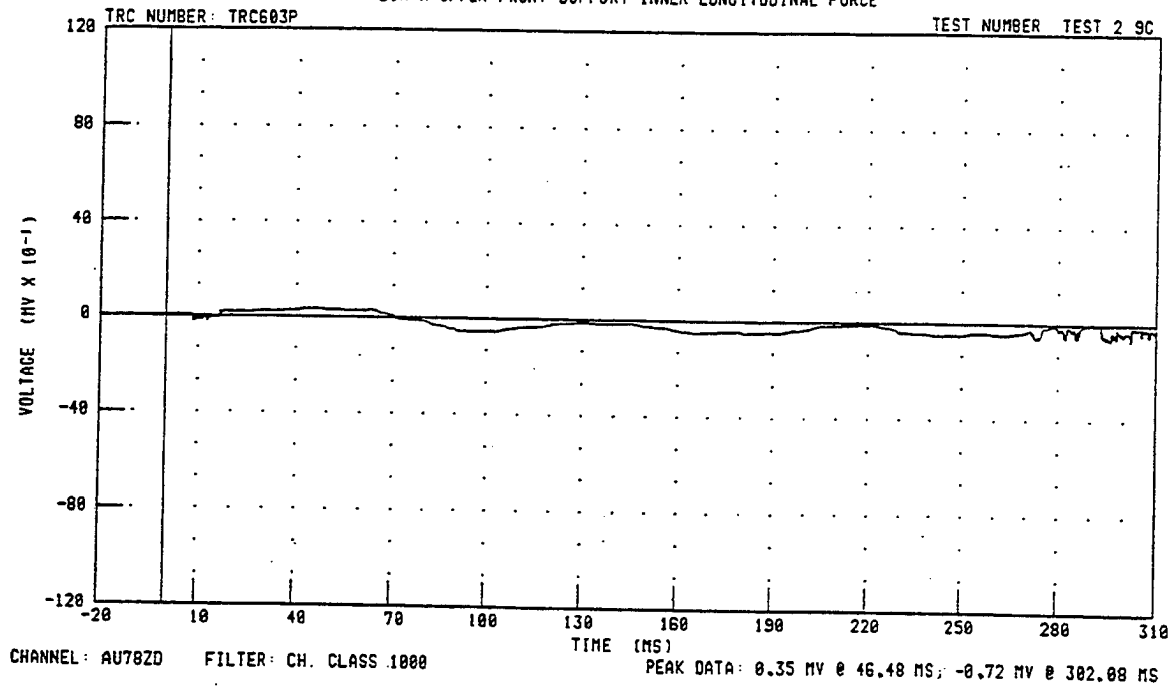
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BIN A UPPER FRONT SUPPORT OUTER LONGITUDINAL FORCE



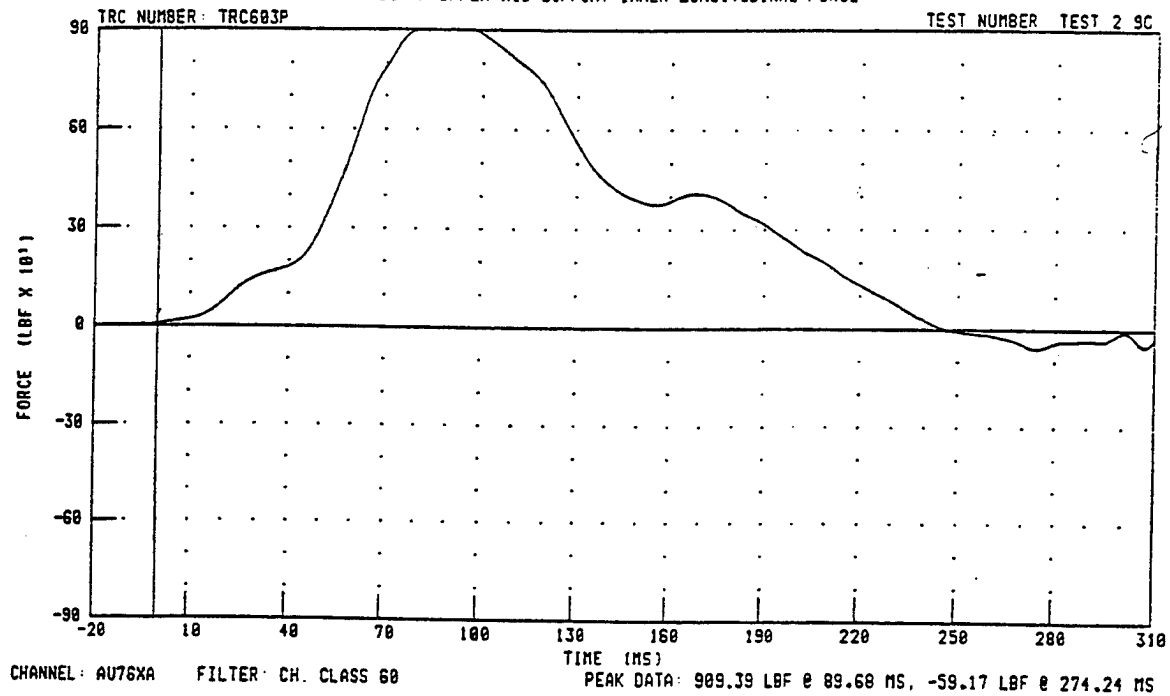
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BIN A UPPER FRONT SUPPORT OUTER VERTICAL FORCE



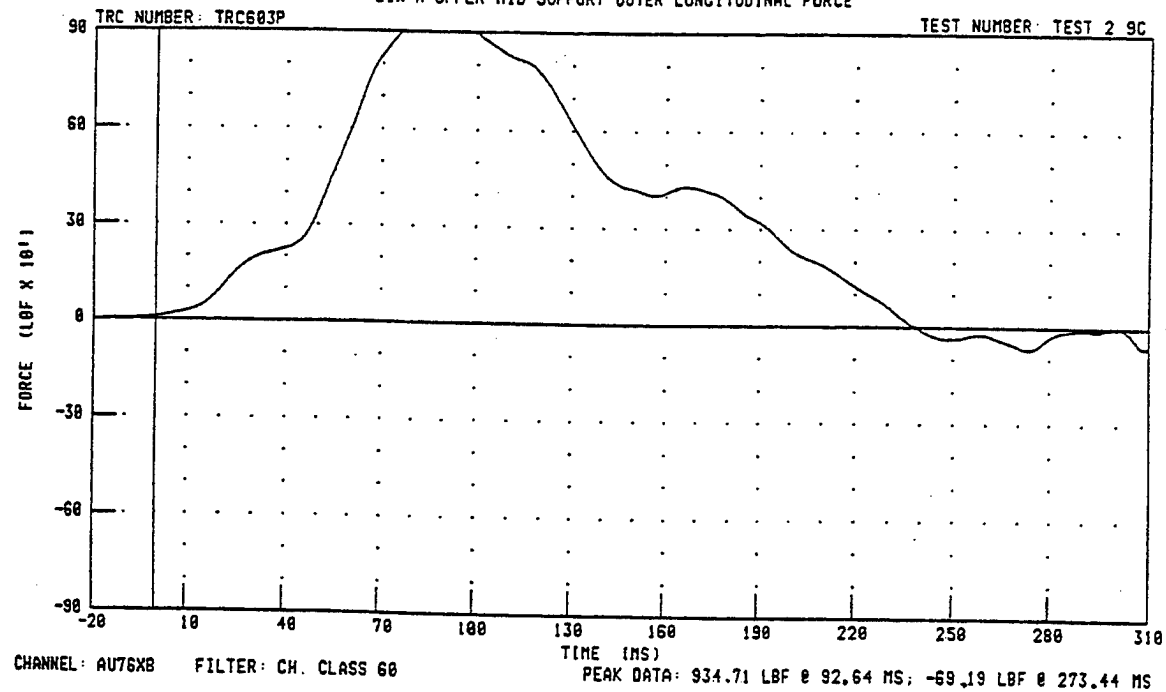
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BIN A UPPER FRONT SUPPORT INNER LONGITUDINAL FORCE



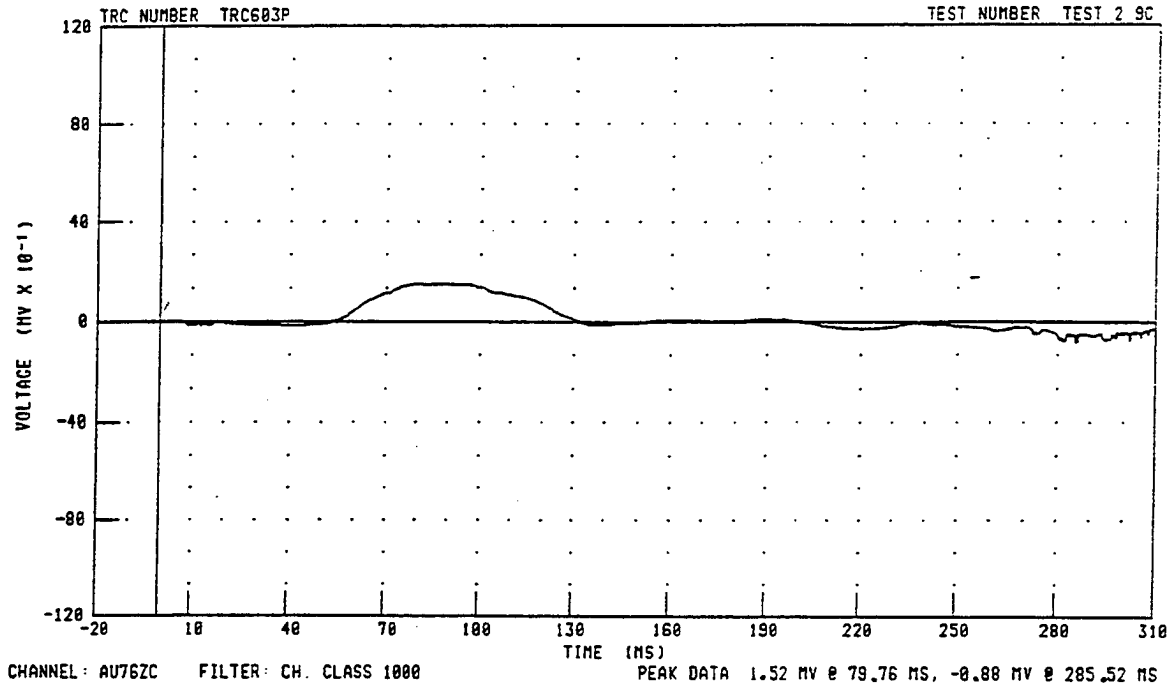
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BIN A UPPER MID SUPPORT INNER LONGITUDINAL FORCE



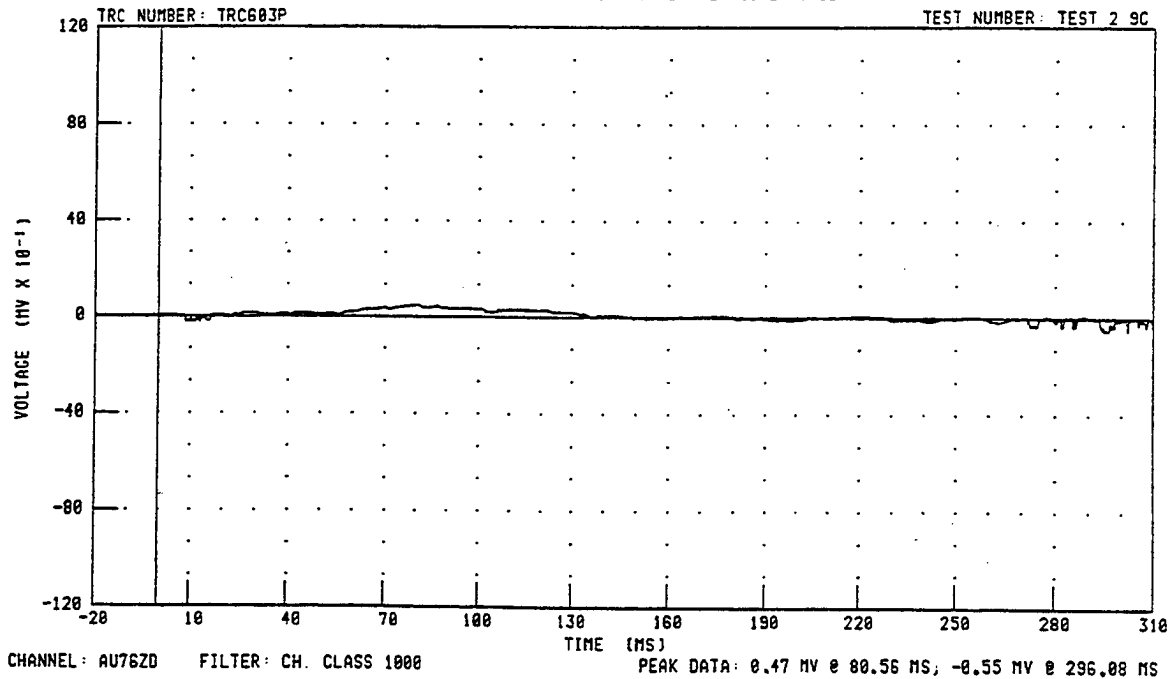
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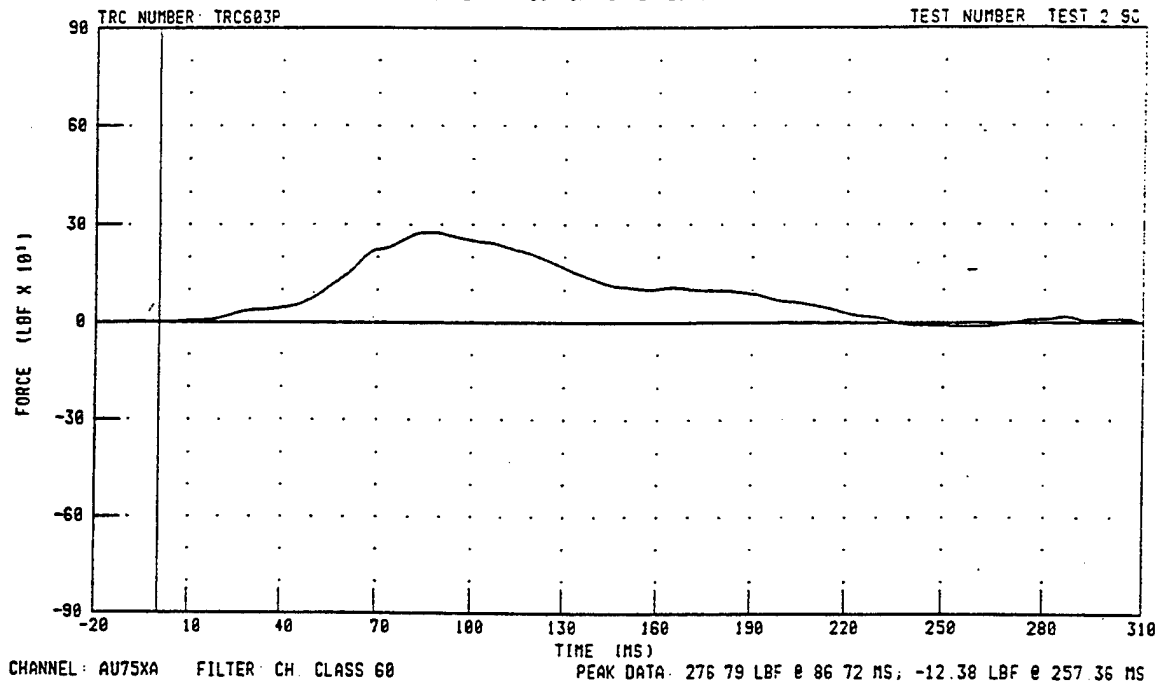
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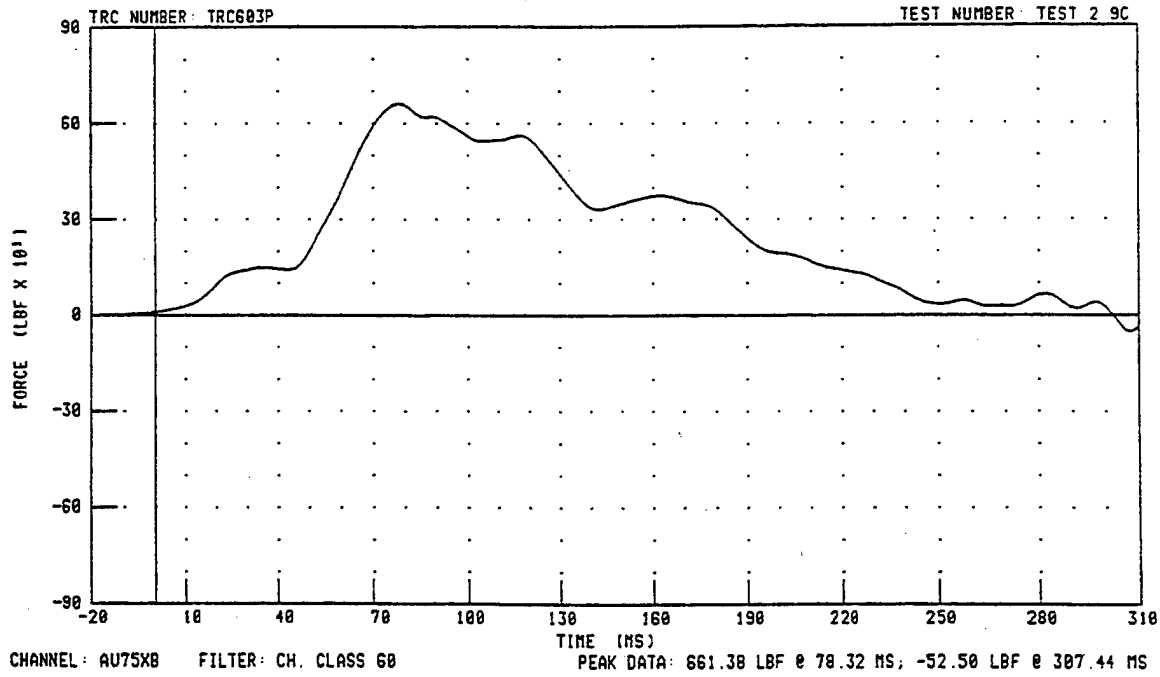
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BIN A UPPER MID SUPPORT INNER VERTICAL FORCE



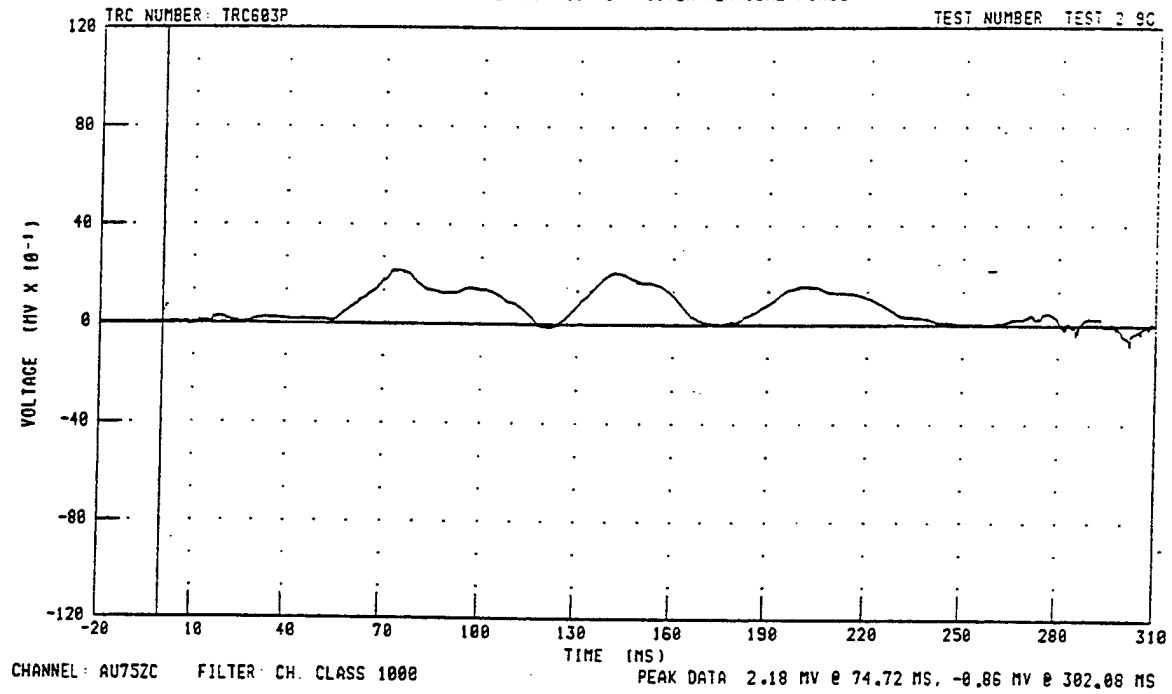
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BIN A UPPER AFT SUPPORT INNER LONGITUDINAL FORCE



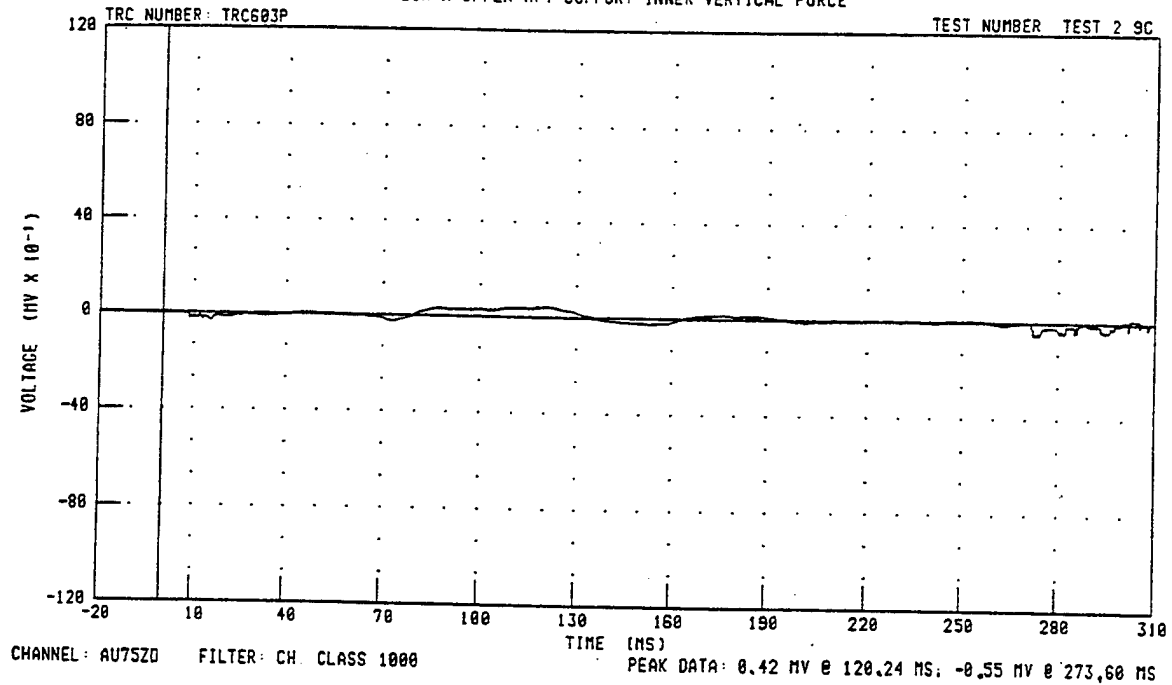
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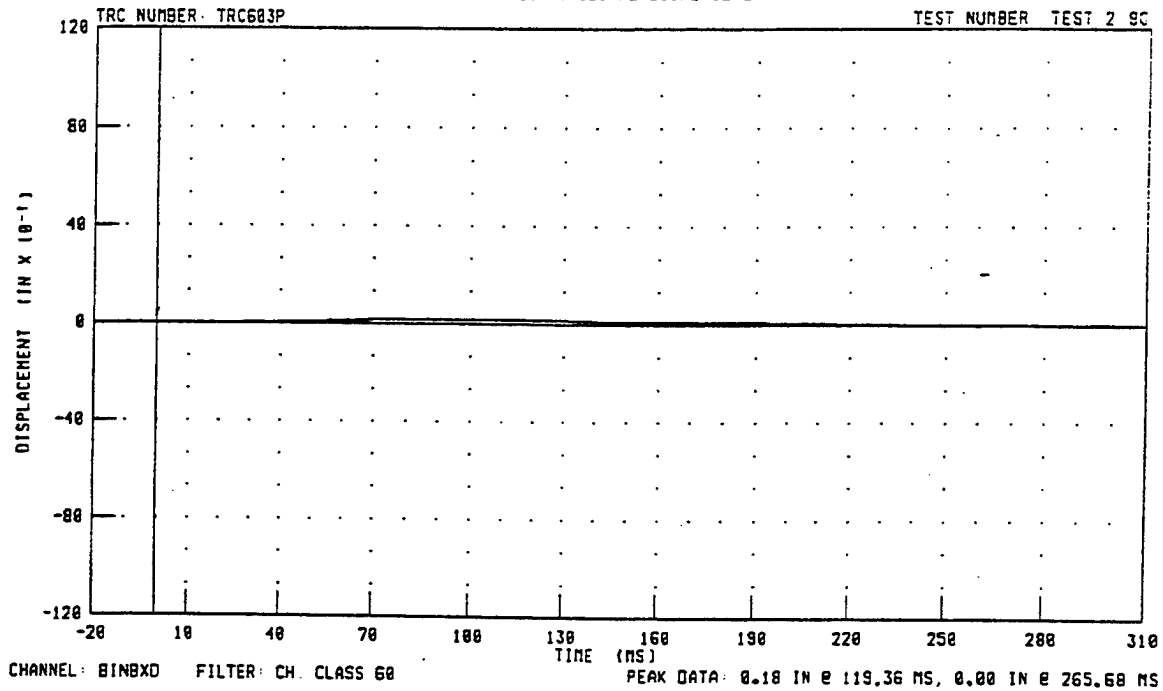
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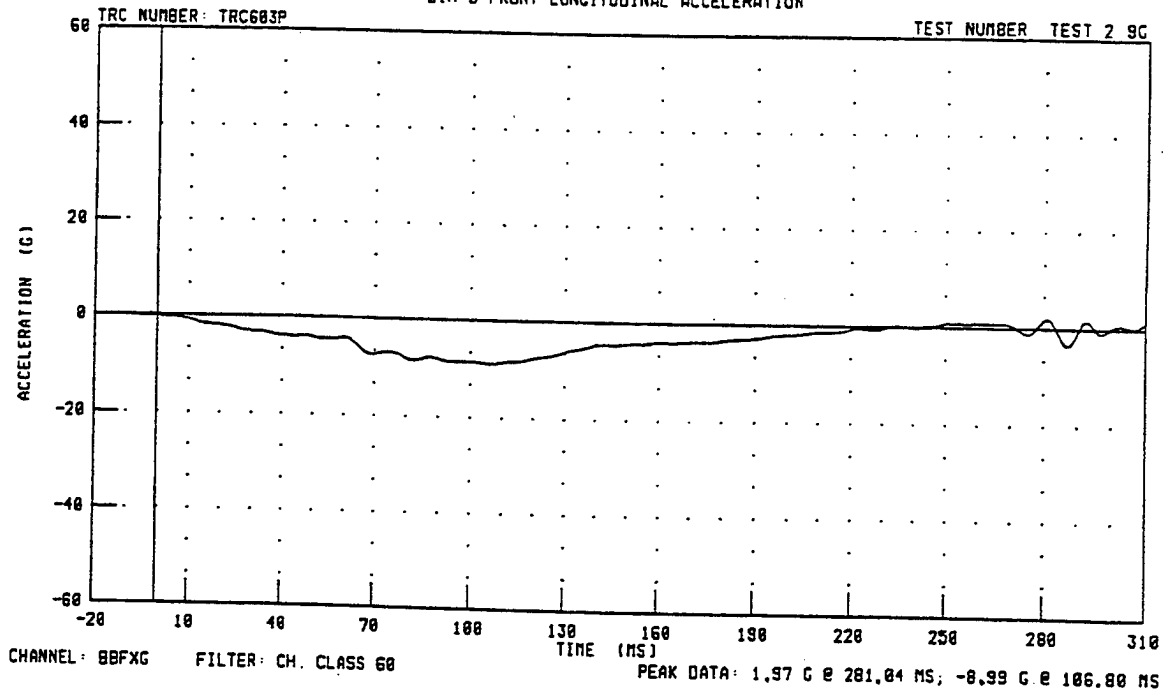
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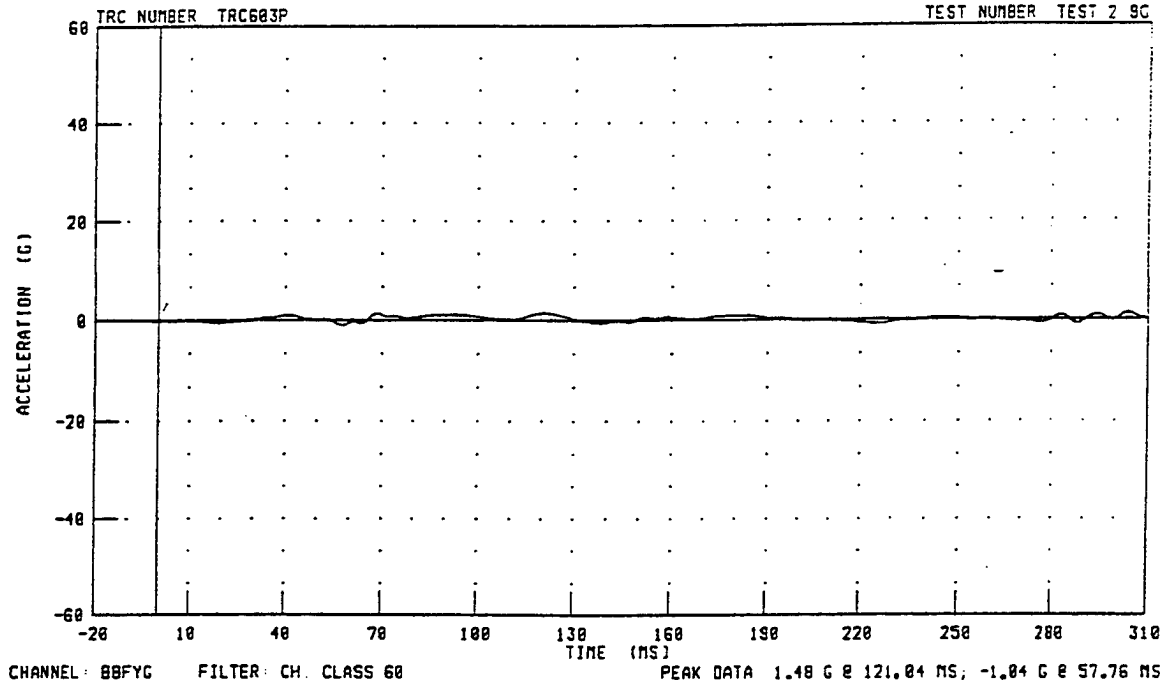
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BIN B LONGITUDINAL DISPLACEMENT



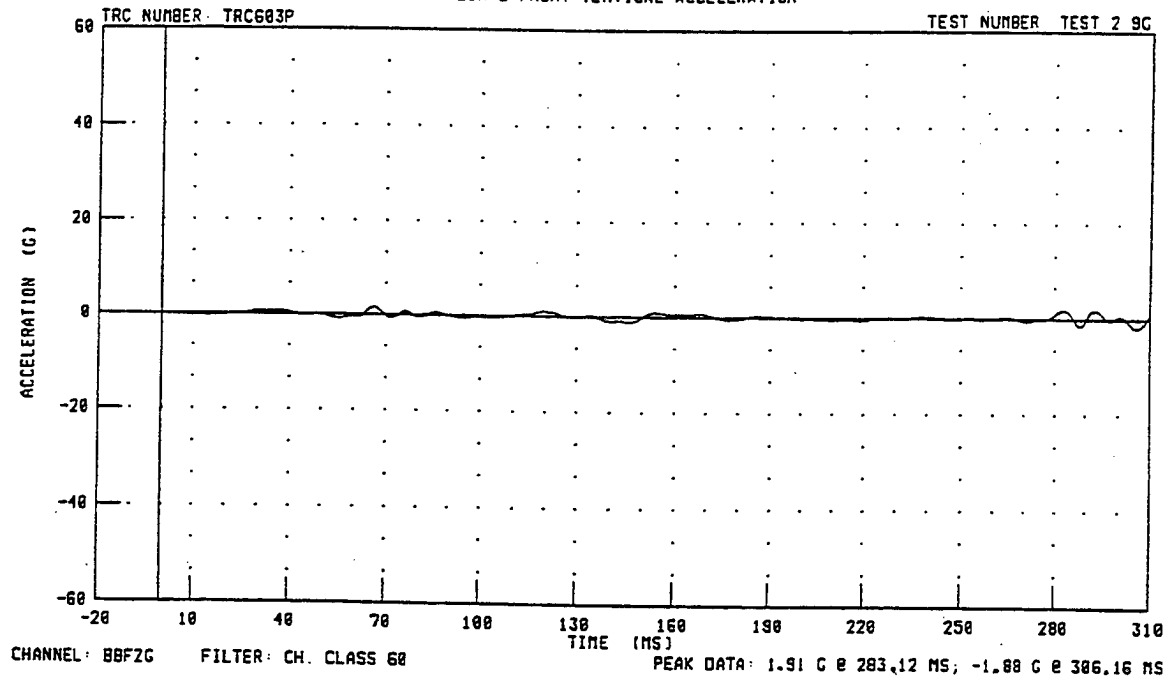
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BIN B FRONT LONGITUDINAL ACCELERATION



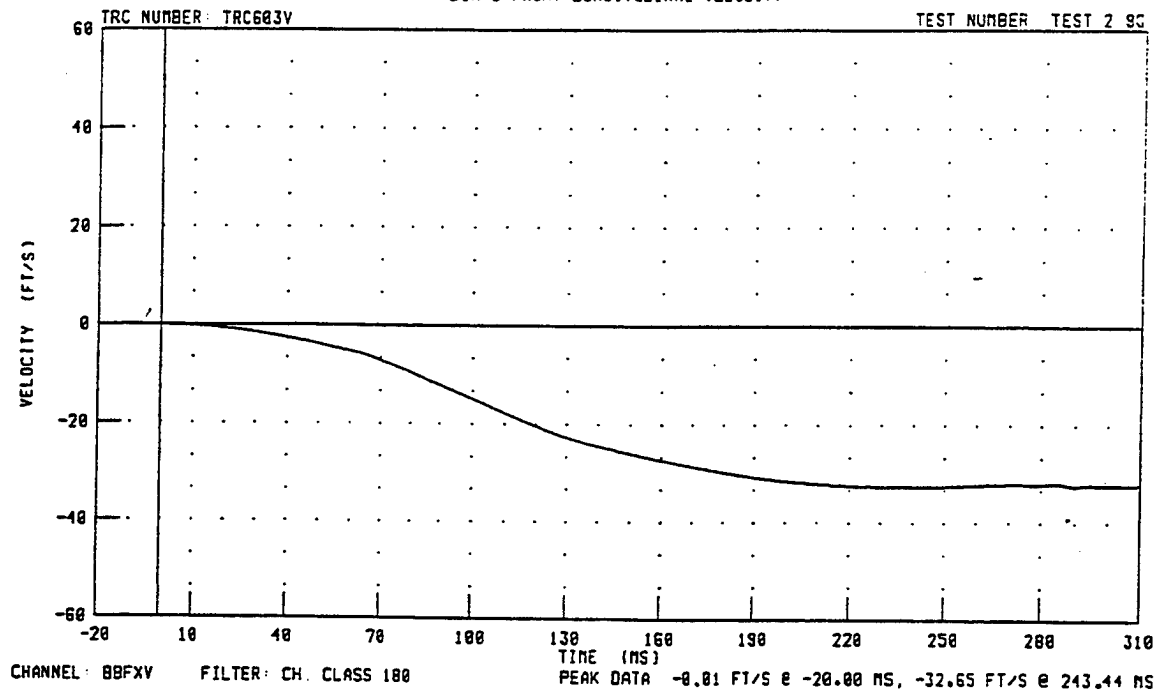
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BIN B FRONT LATERAL ACCELERATION



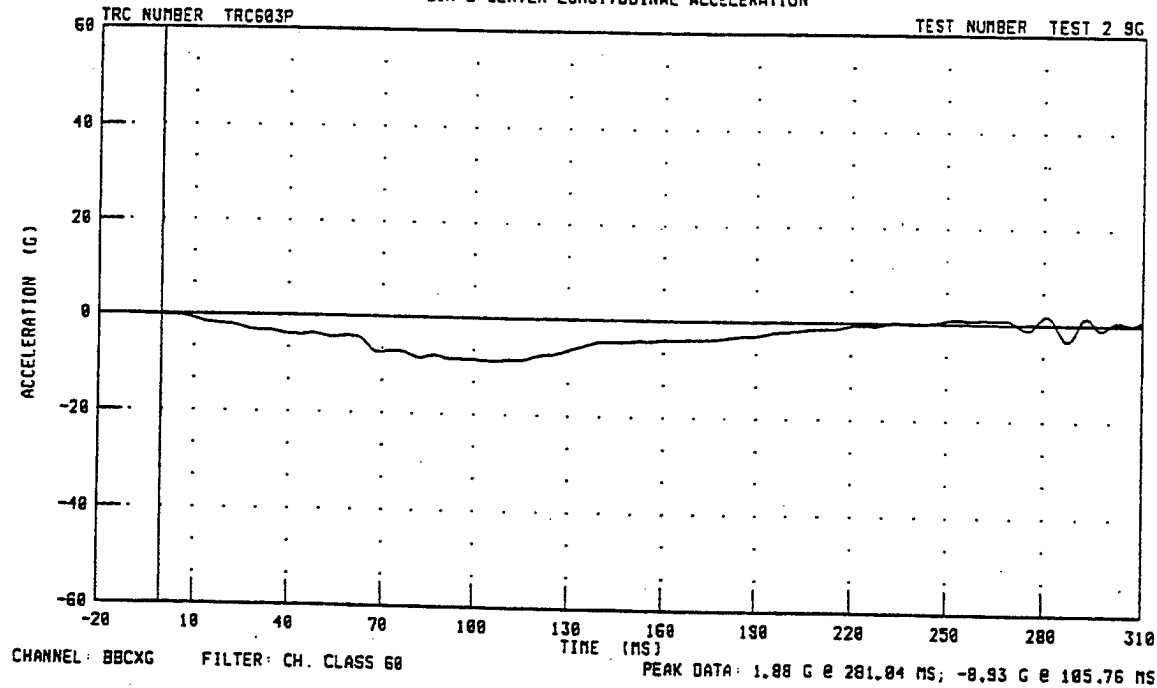
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BIN B FRONT VERTICAL ACCELERATION



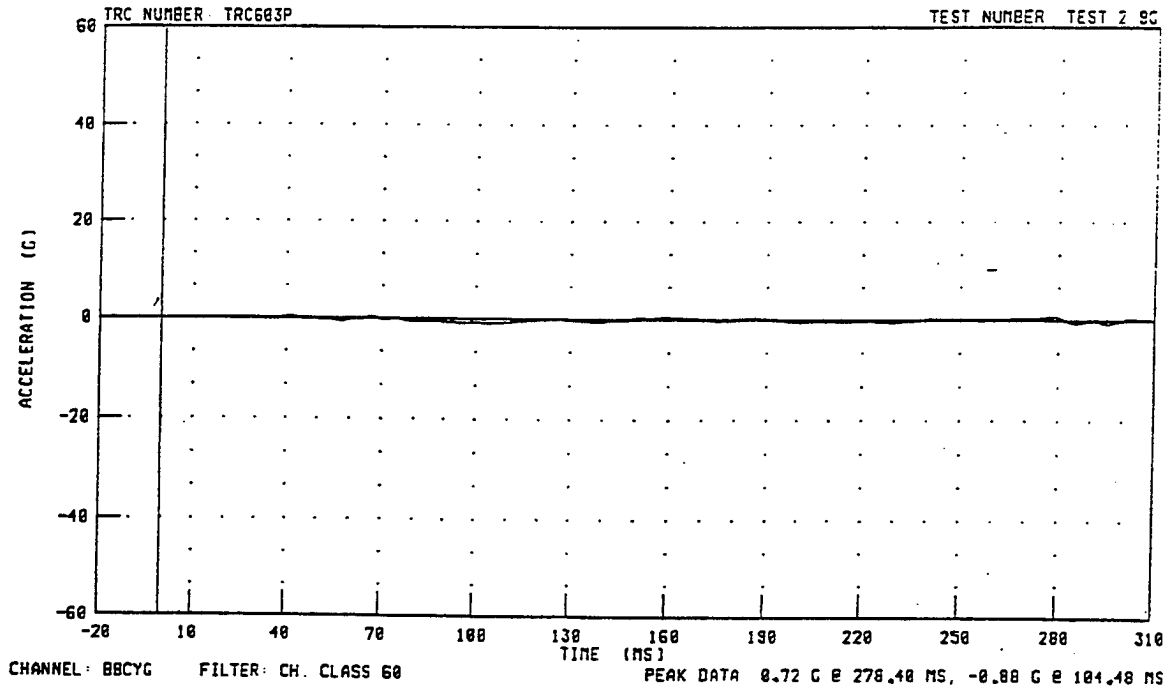
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BIN 8 FRONT LONGITUDINAL VELOCITY



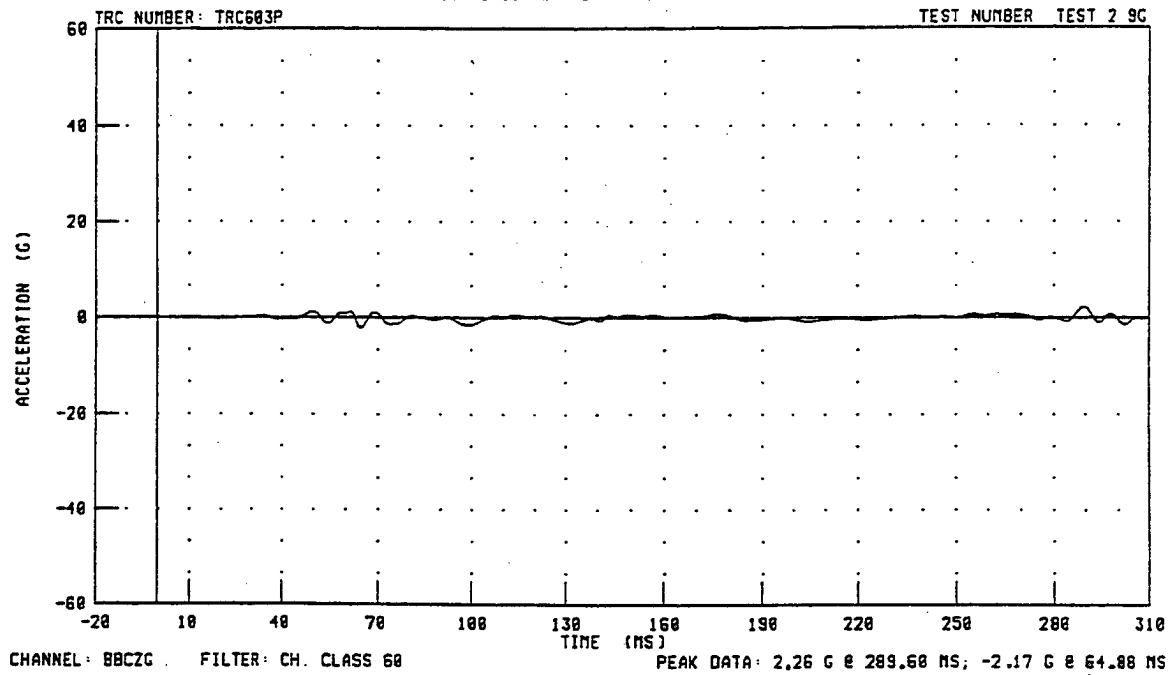
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BIN 8 CENTER LONGITUDINAL ACCELERATION



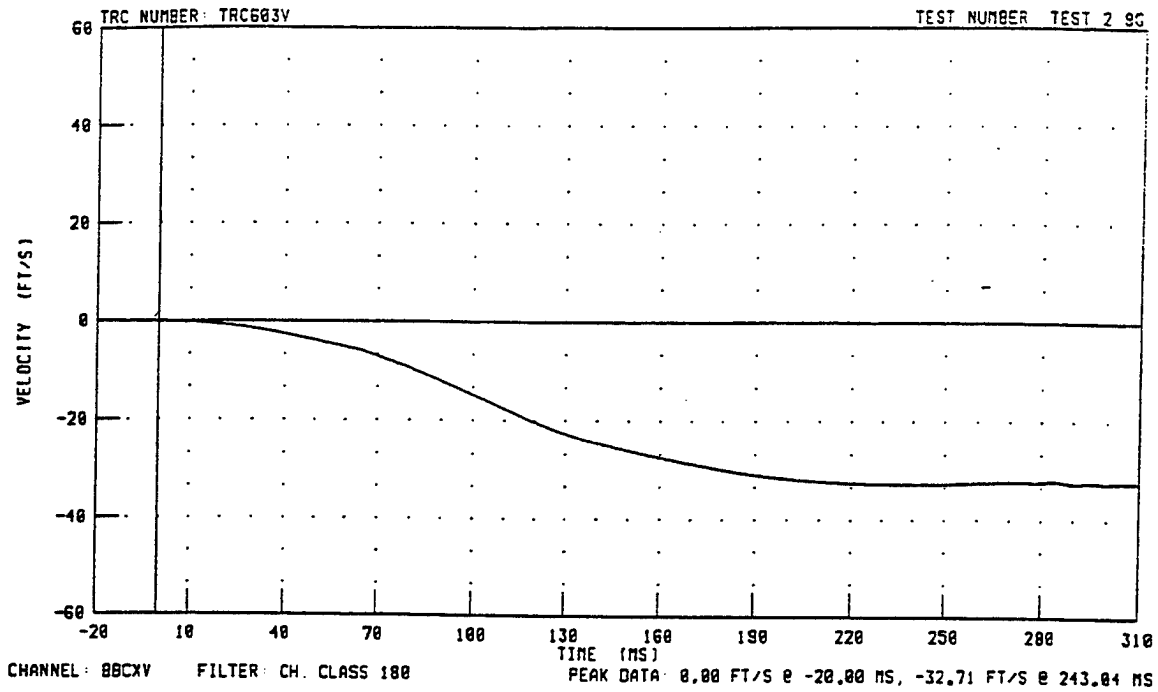
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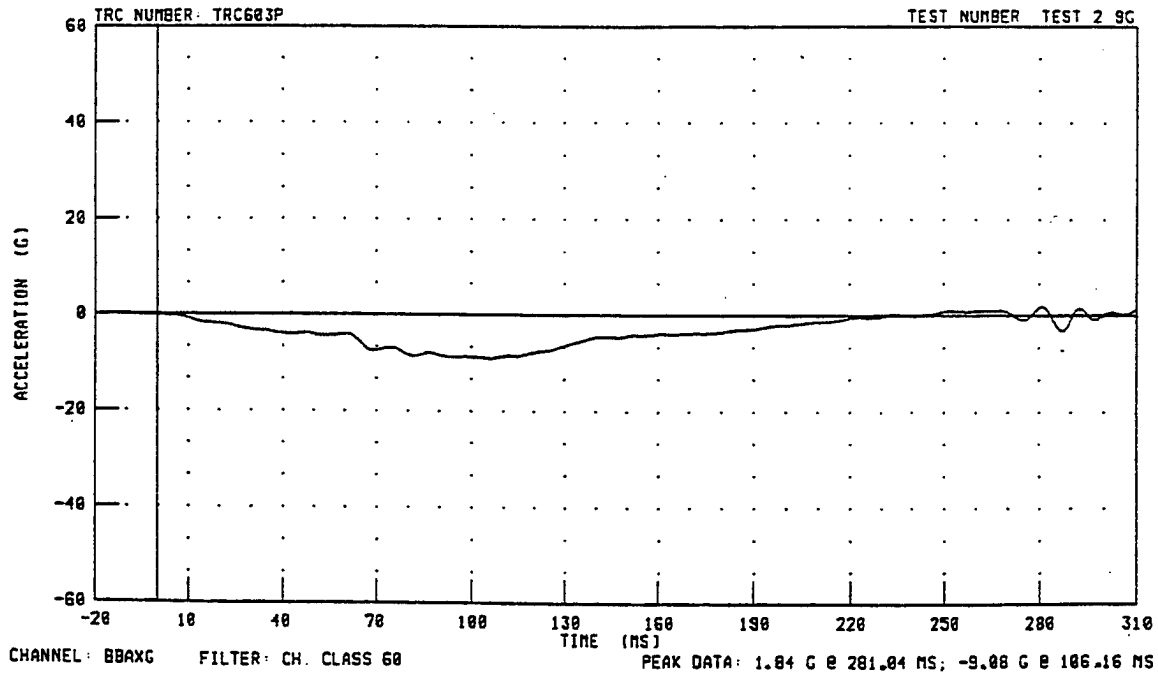
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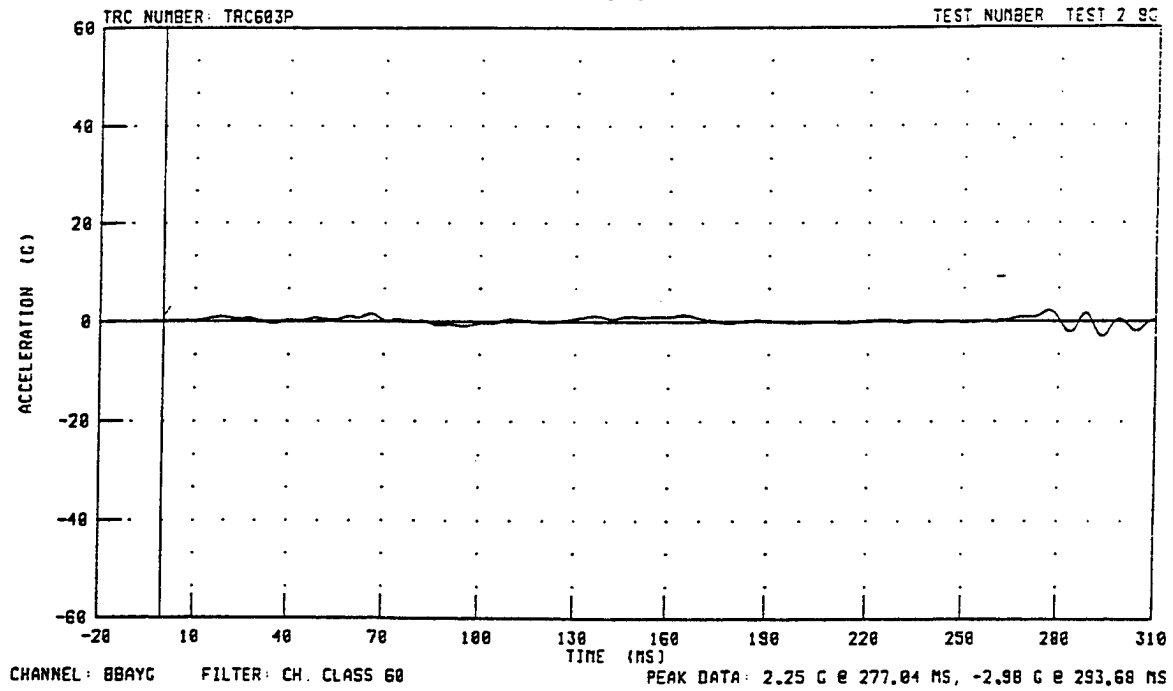
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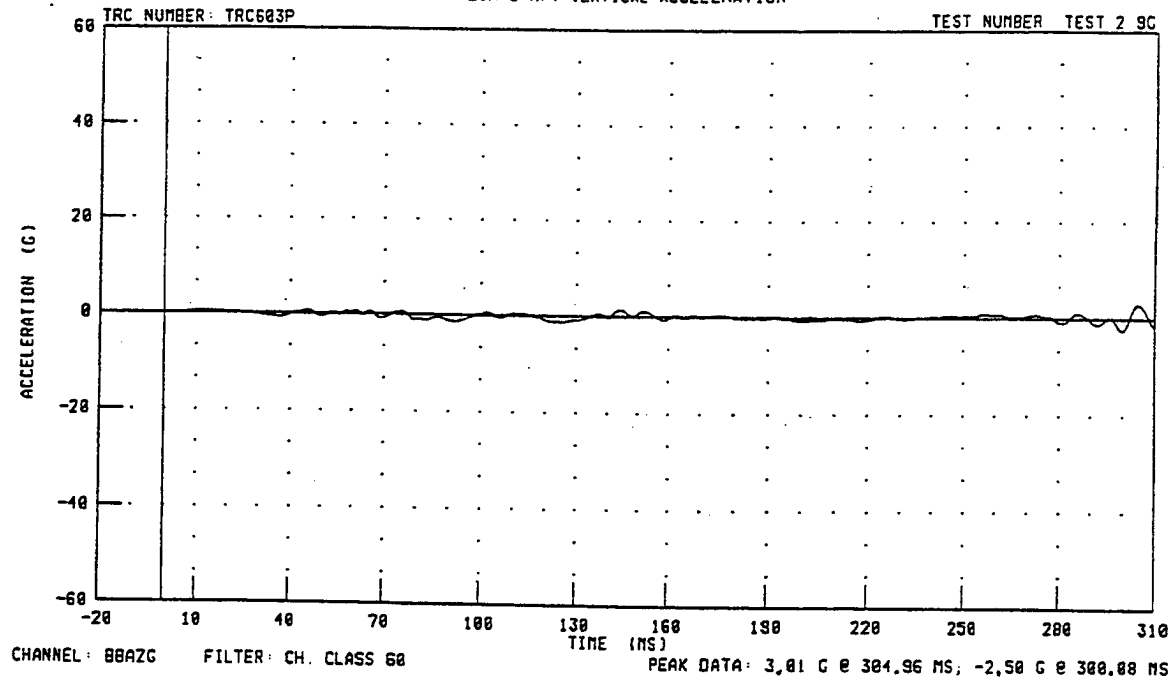
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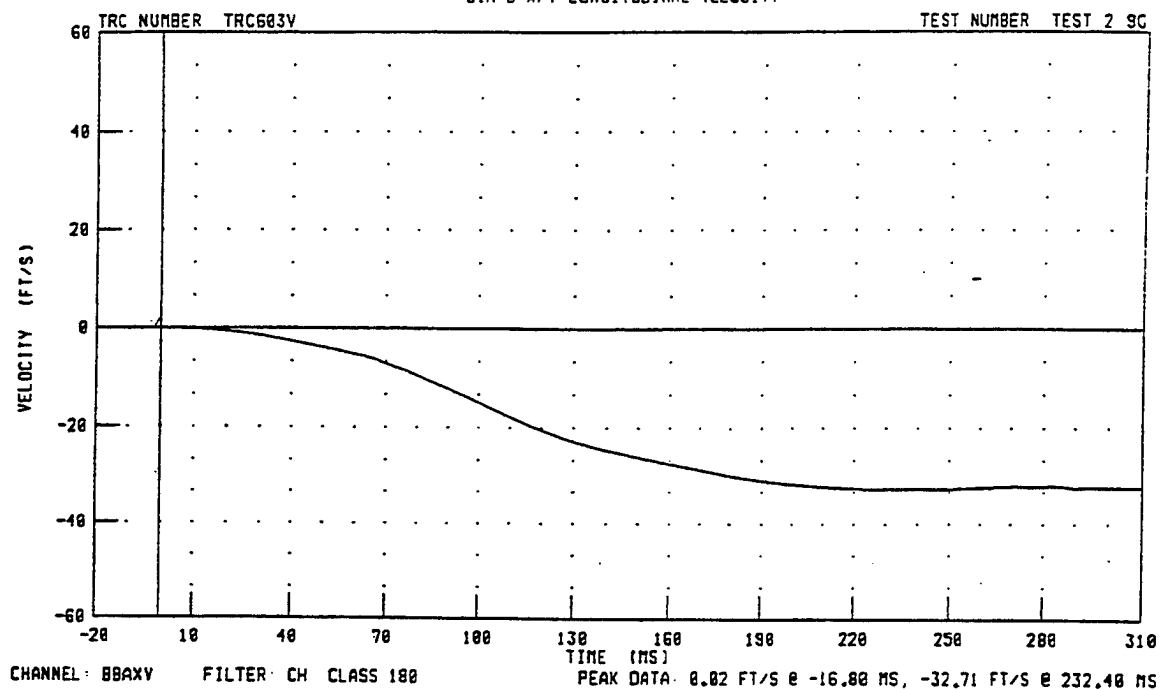
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BIN B AFT LATERAL ACCELERATION



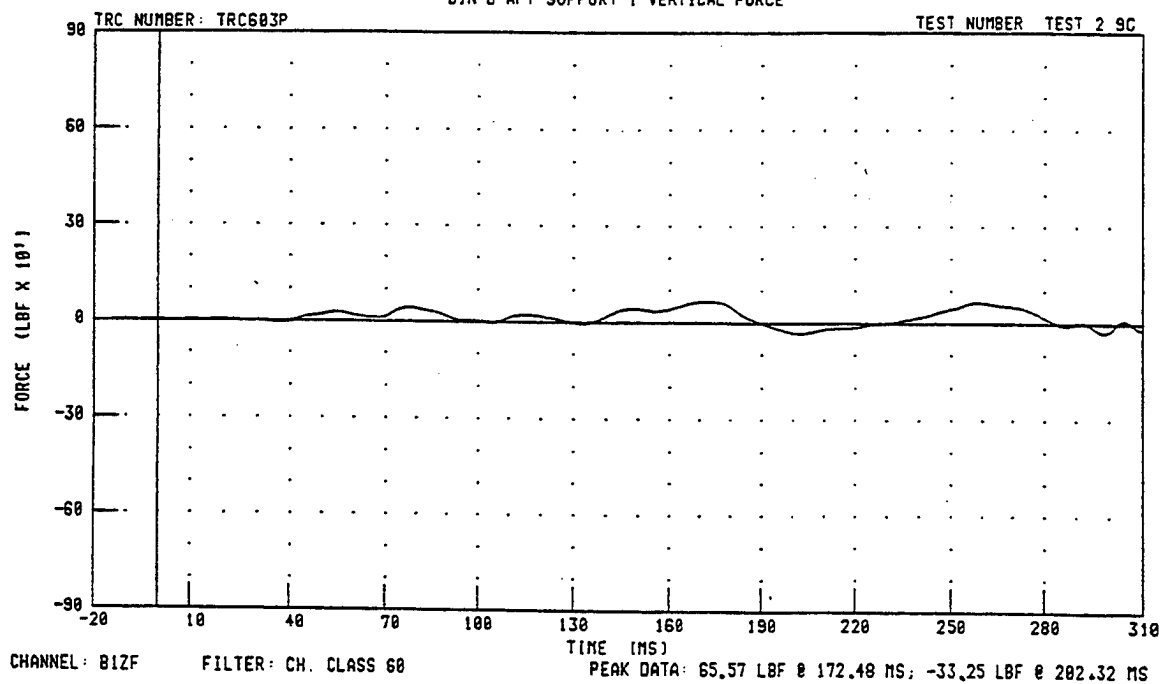
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BIN B AFT VERTICAL ACCELERATION



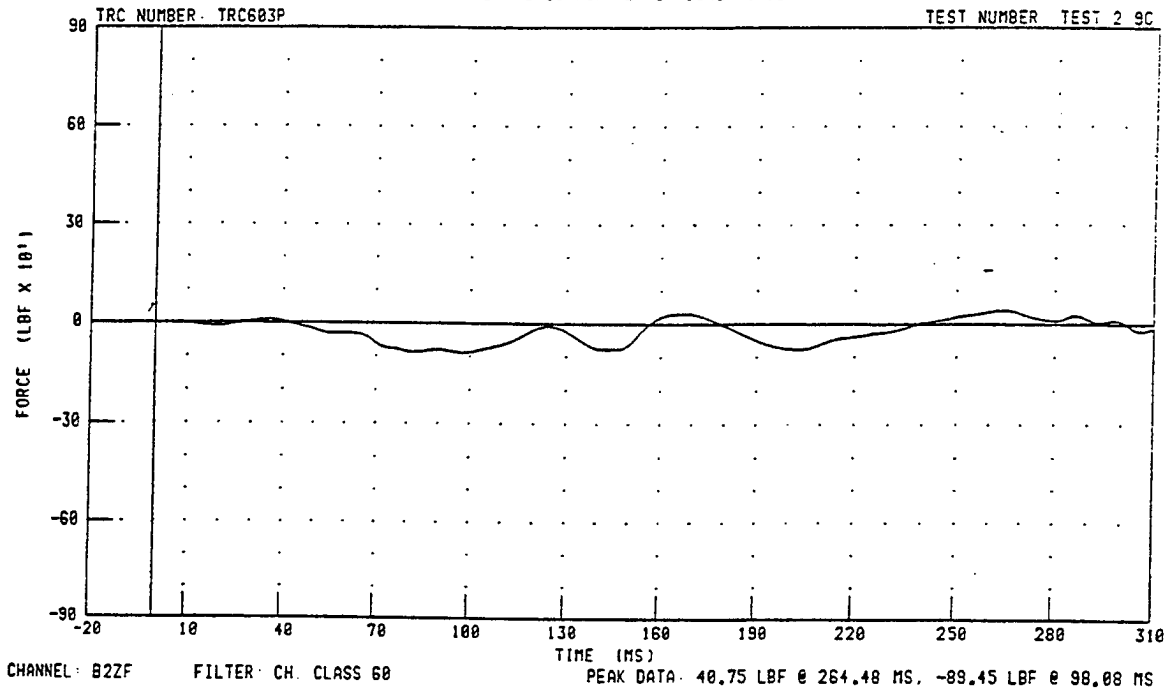
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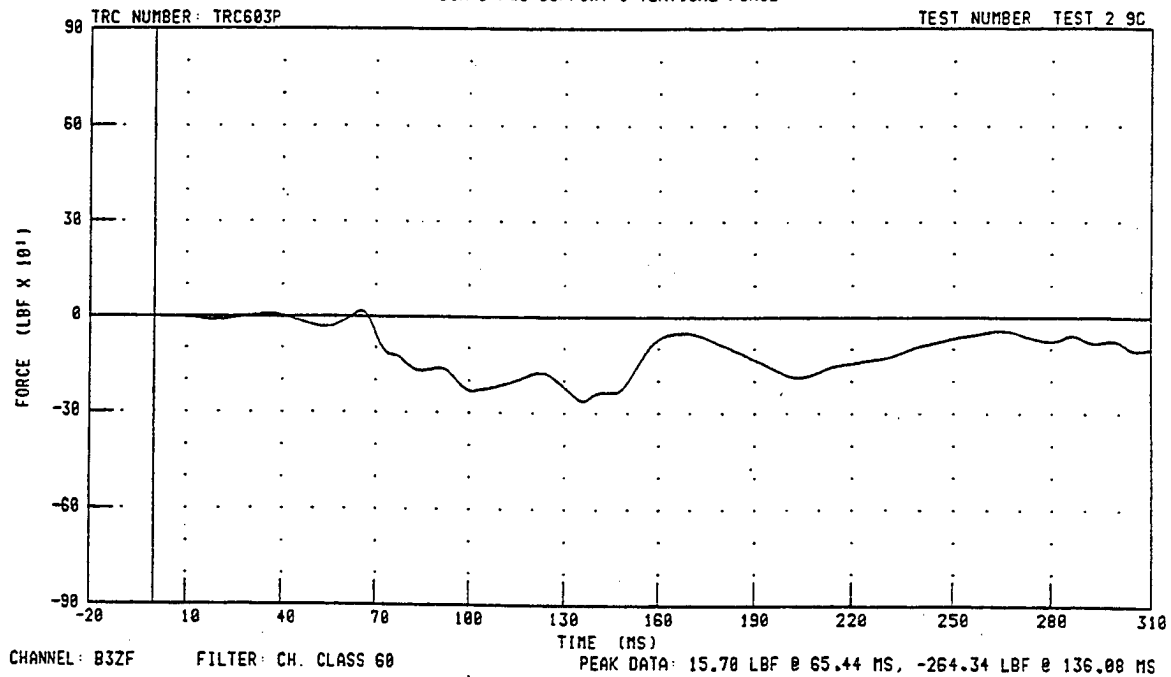
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BIN 8 AFT SUPPORT 1 VERTICAL FORCE



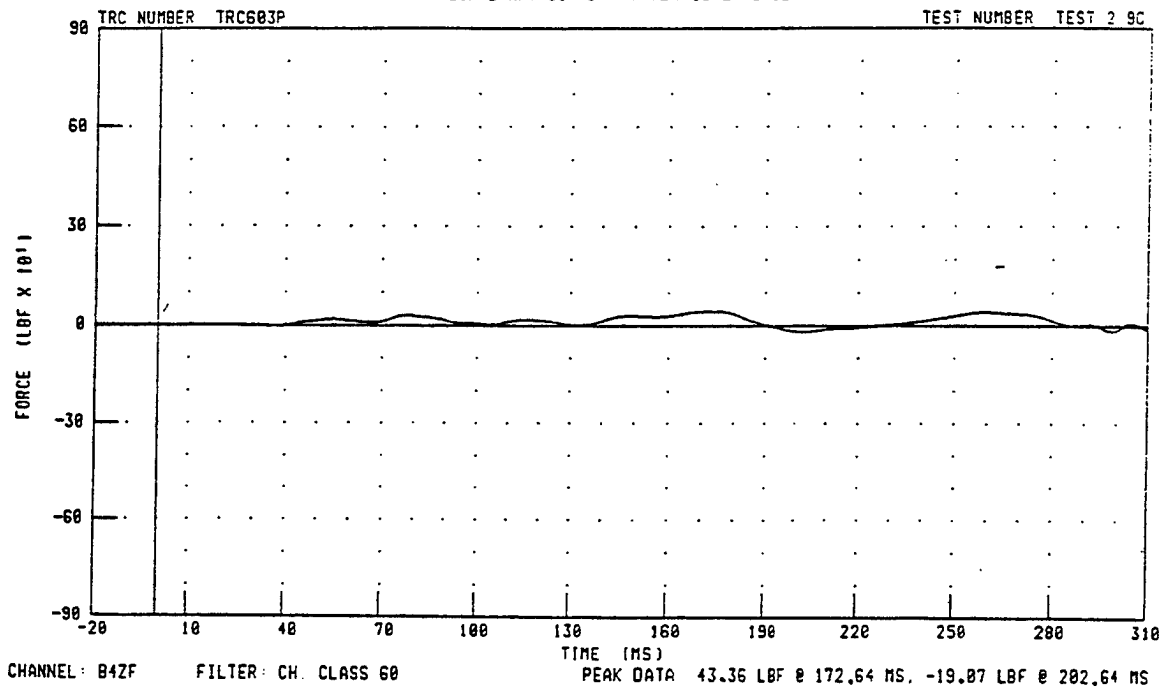
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BIN B FWD SUPPORT 2 VERTICAL FORCE



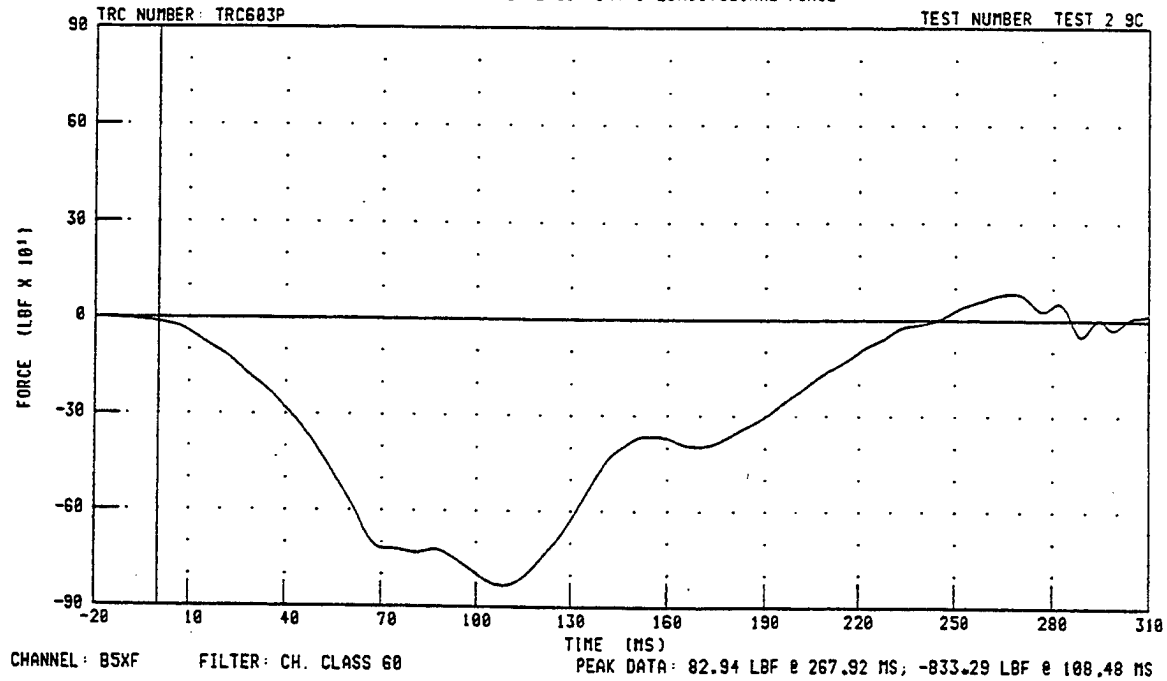
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BIN B FWD SUPPORT 3 VERTICAL FORCE



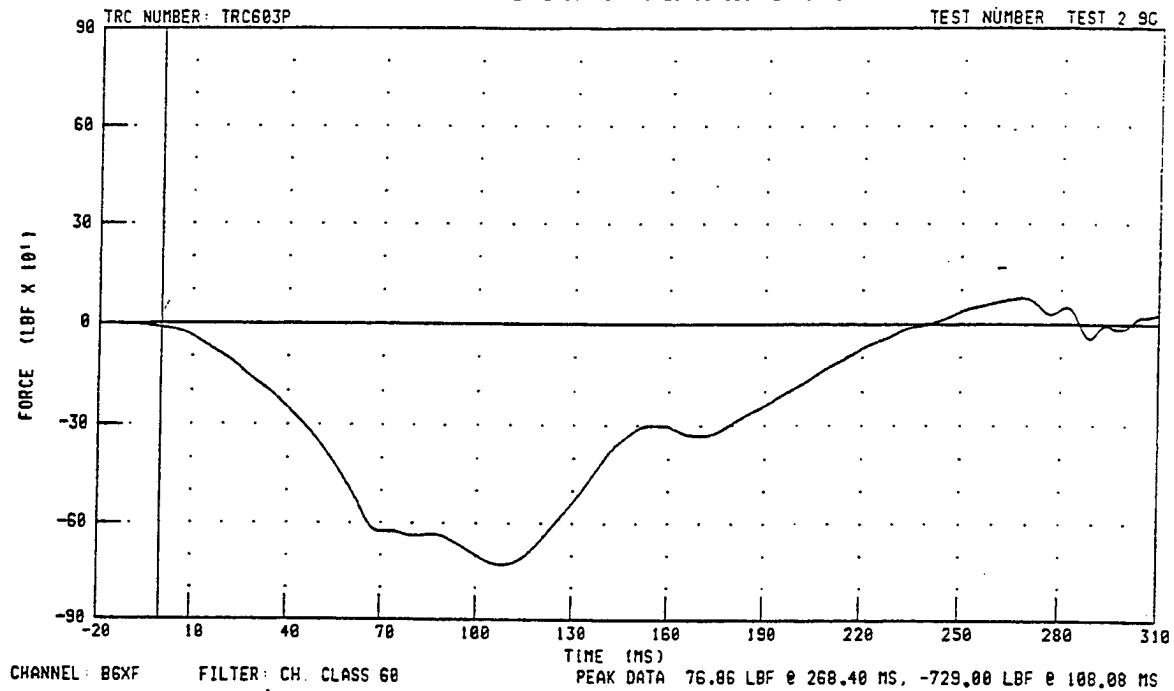
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BIN 8 AFT SUPPORT 4 VERTICAL FORCE



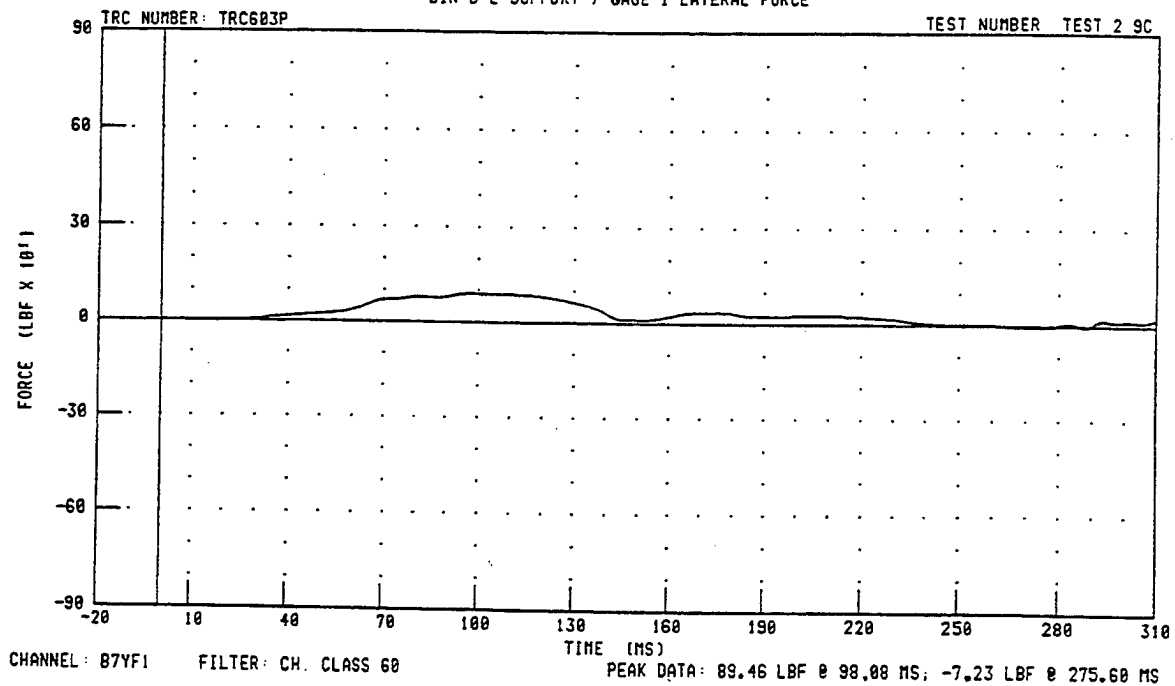
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BIN 8 AFT PLATE SUPPORT 5 LONGITUDINAL FORCE



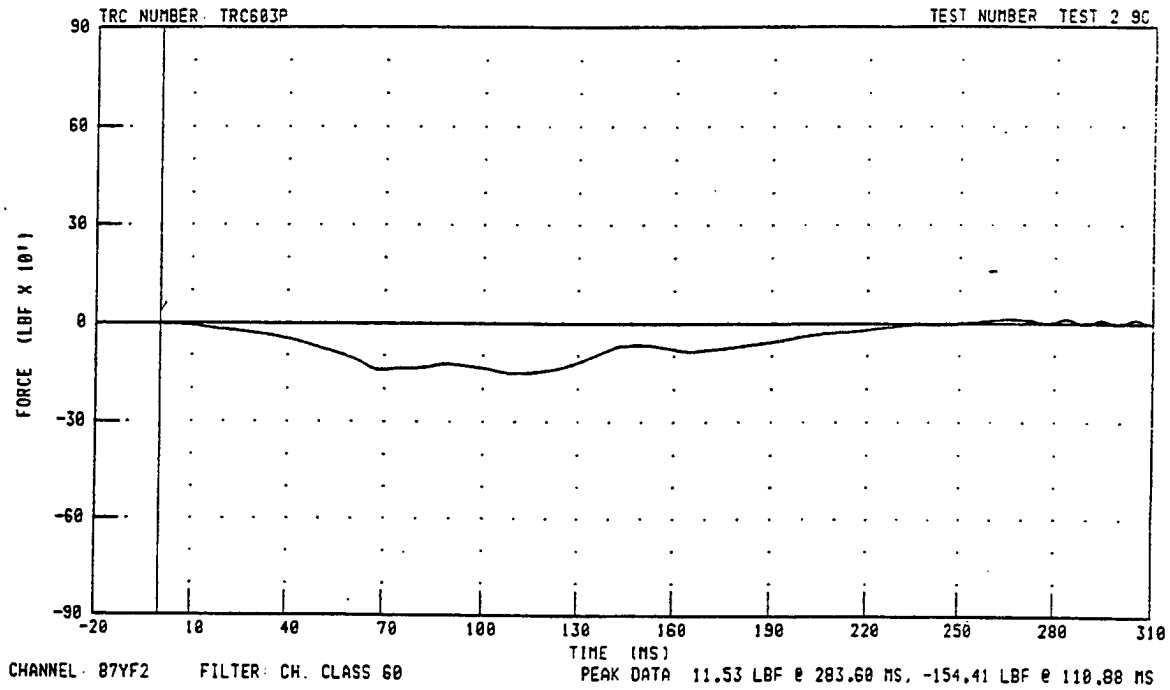
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BIN B FWD PLATE SUPPORT 6 LONGITUDINAL FORCE



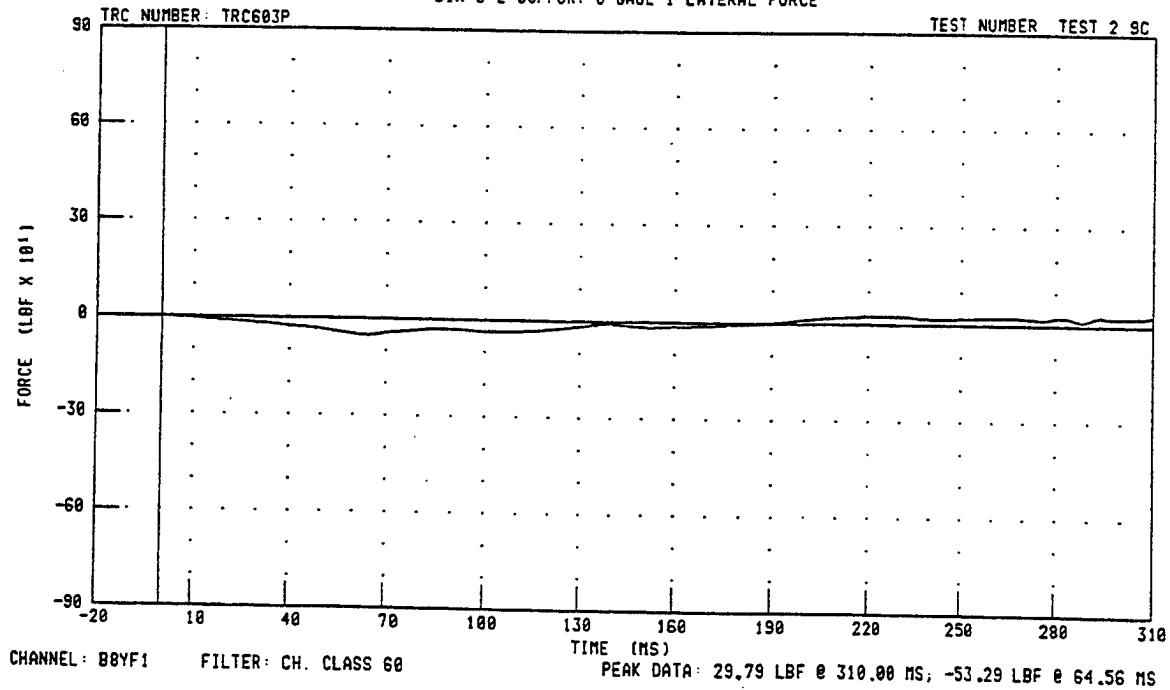
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BIN B L SUPPORT 7 GAGE 1 LATERAL FORCE



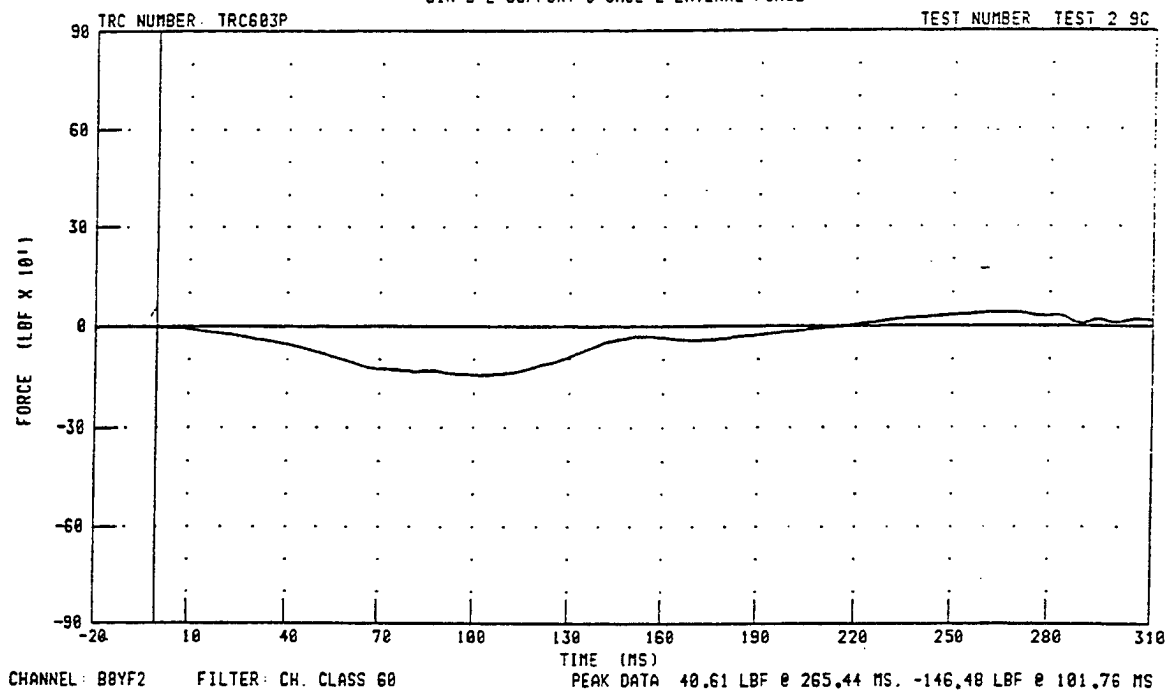
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BIN 8 L SUPPORT 7 GAGE 2 LATERAL FORCE



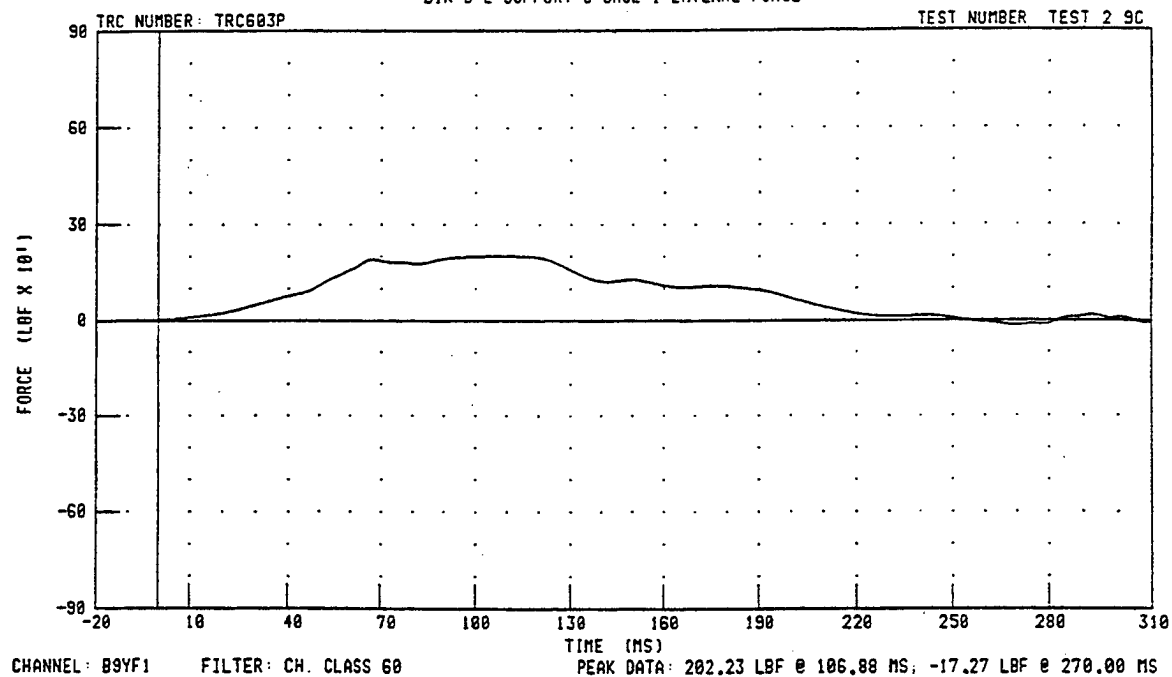
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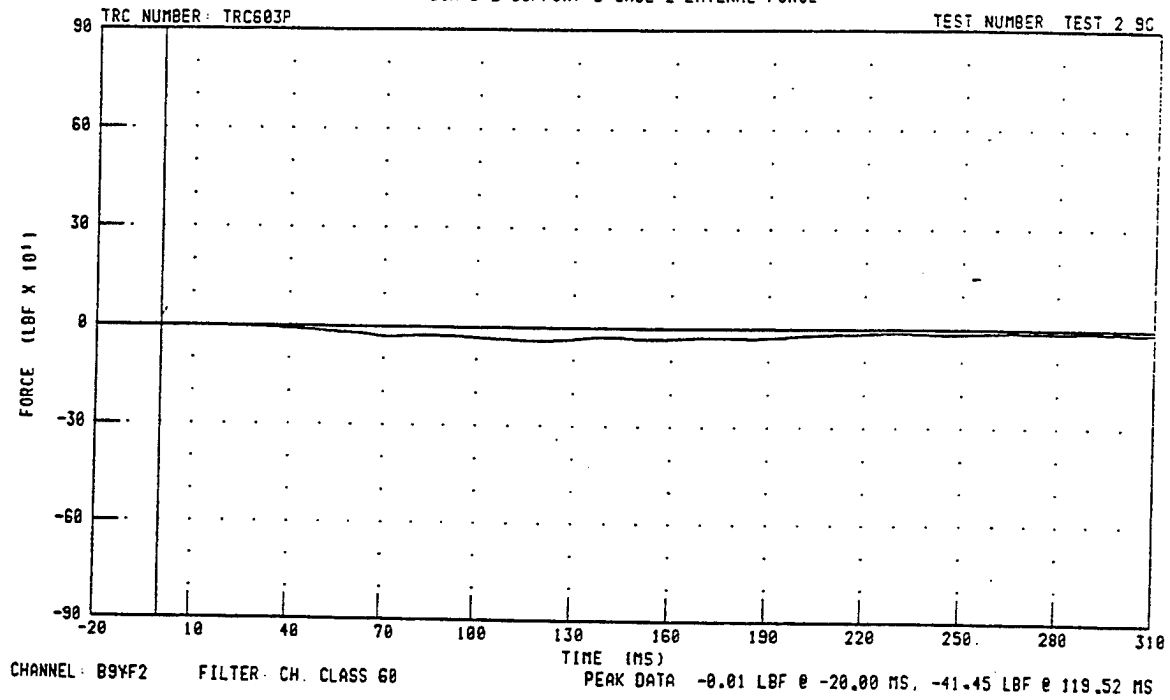
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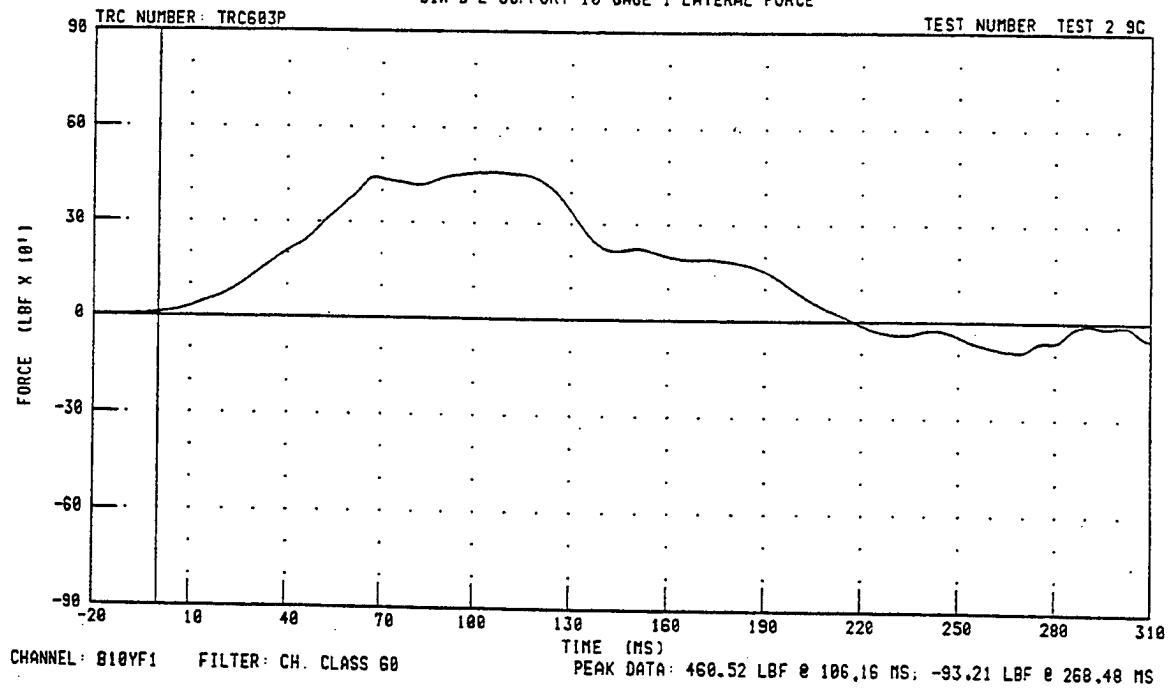
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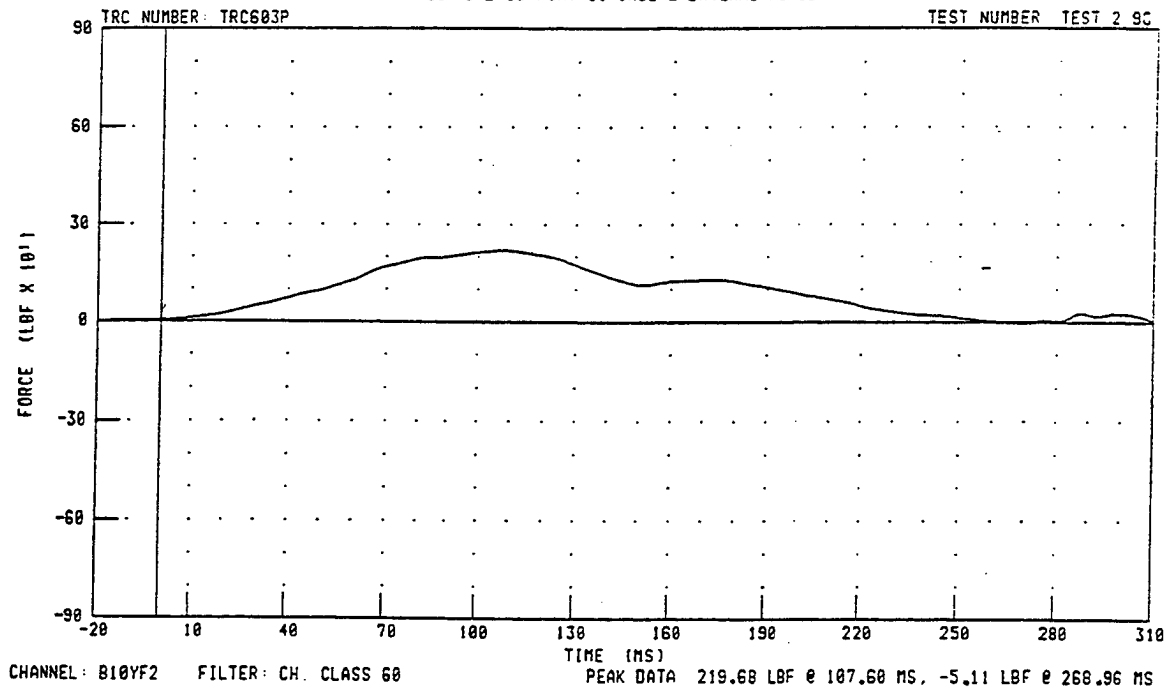
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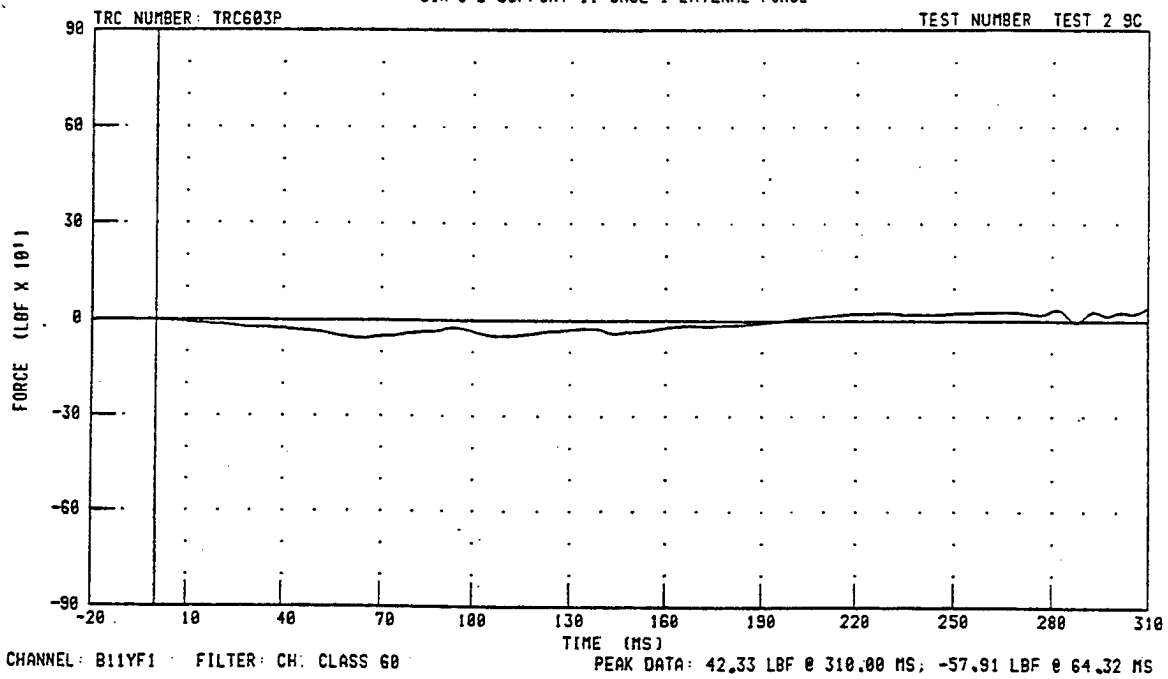
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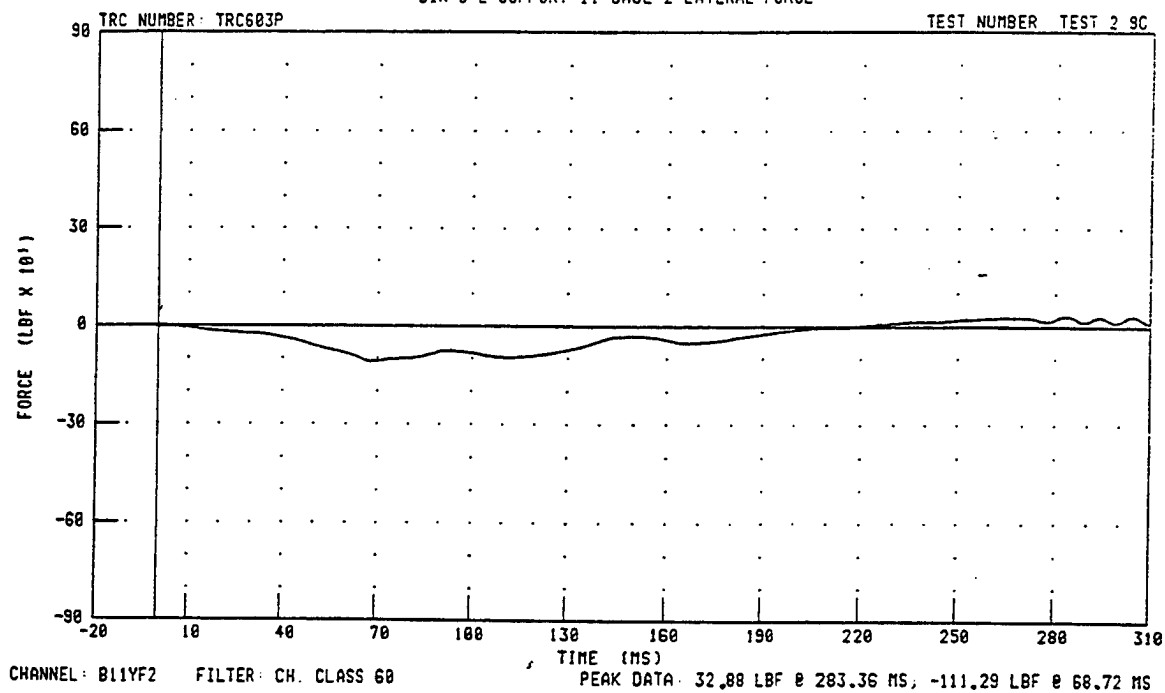
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B737 LONGITUDINAL IMPACT 9G 20 NOV 97
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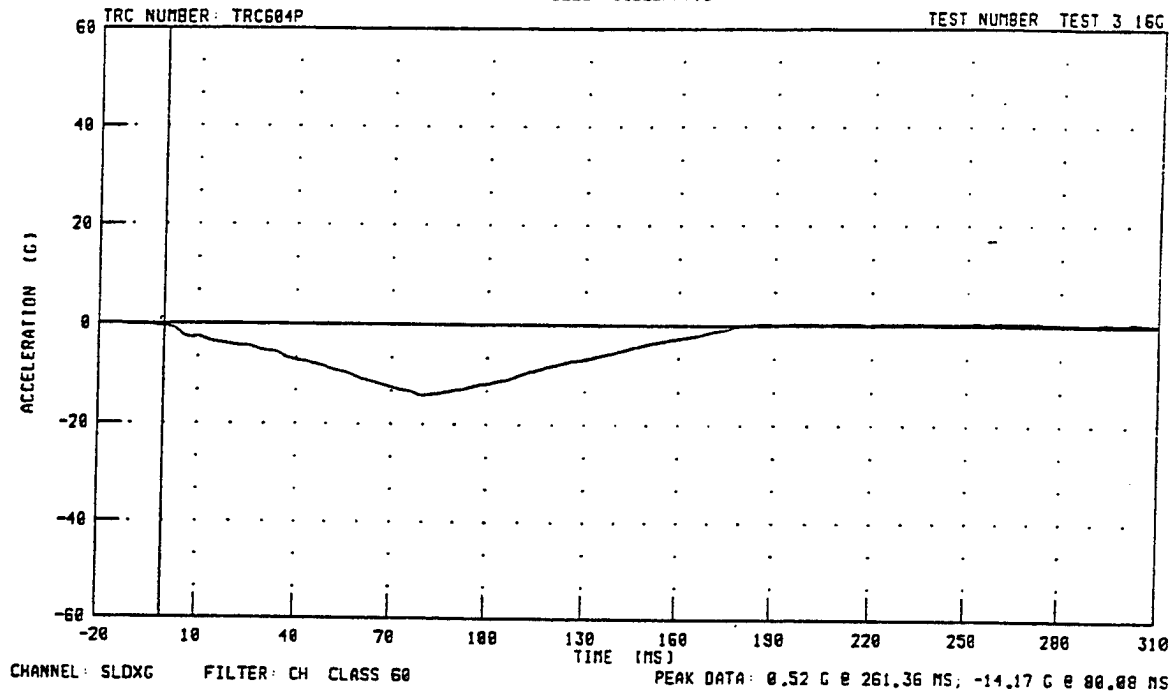


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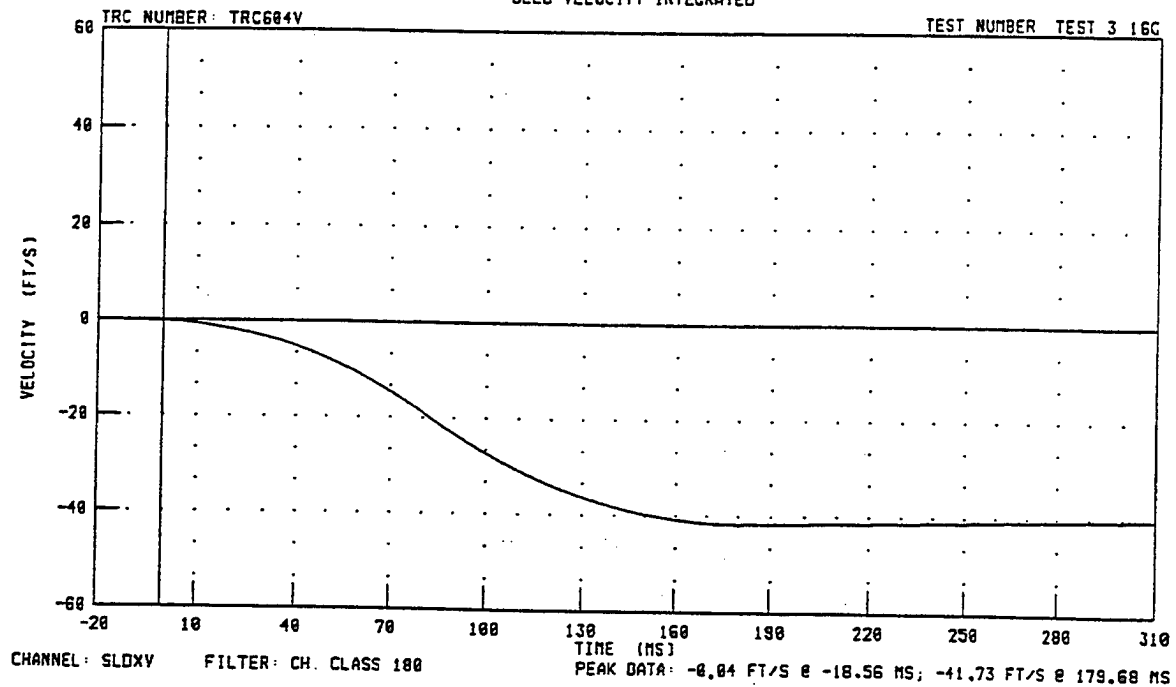


TEST 3

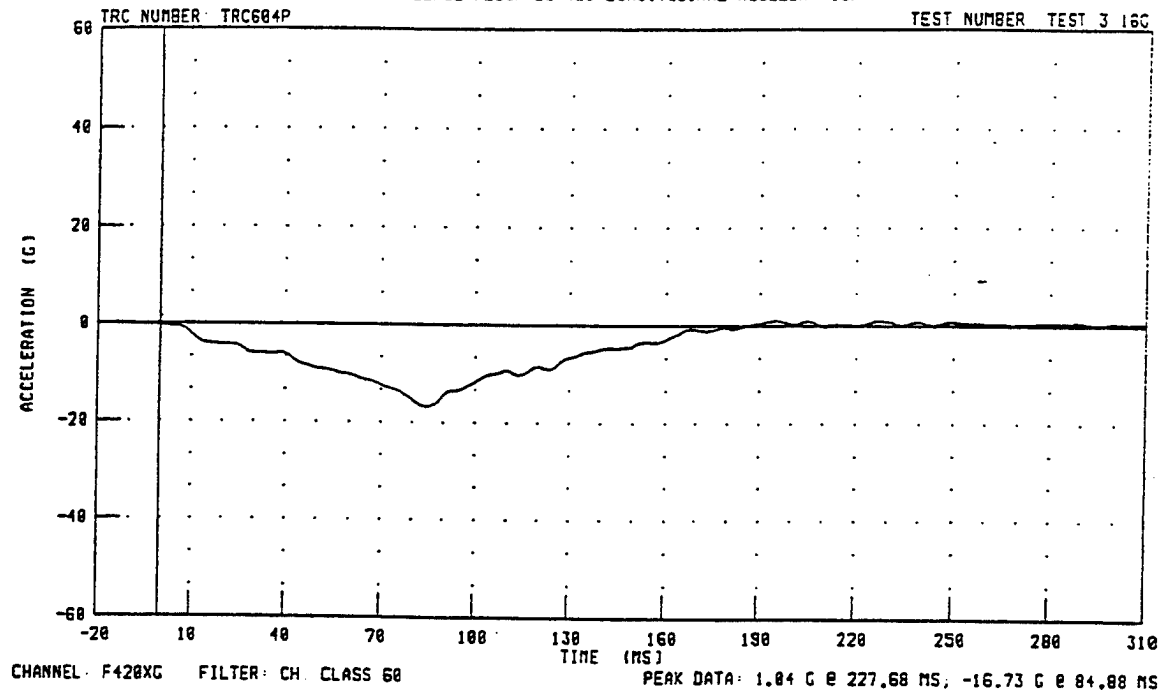
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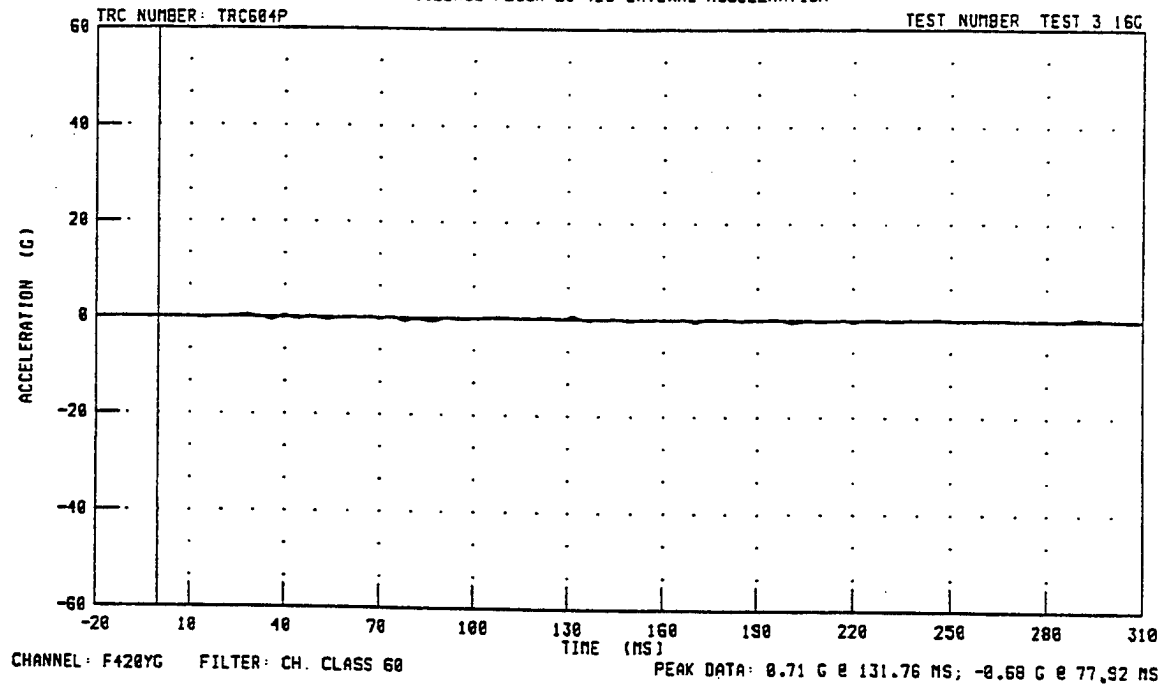
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SLED VELOCITY INTEGRATED



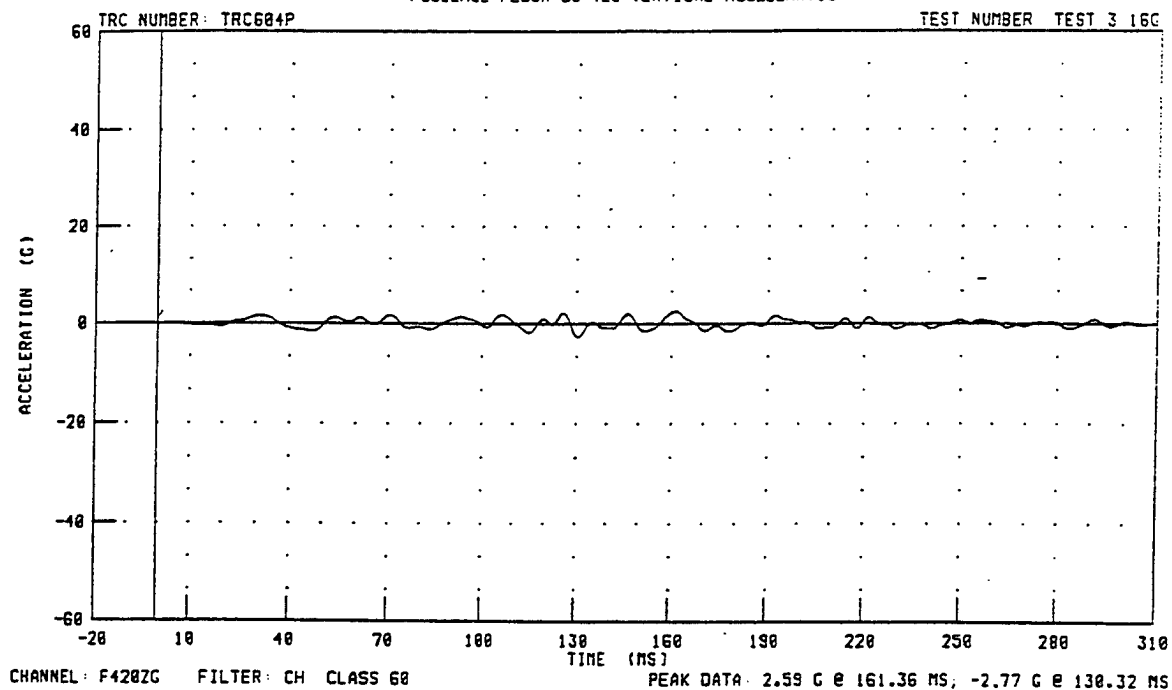
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FUSELAGE FLOOR BS 420 LONGITUDINAL ACCELERATION



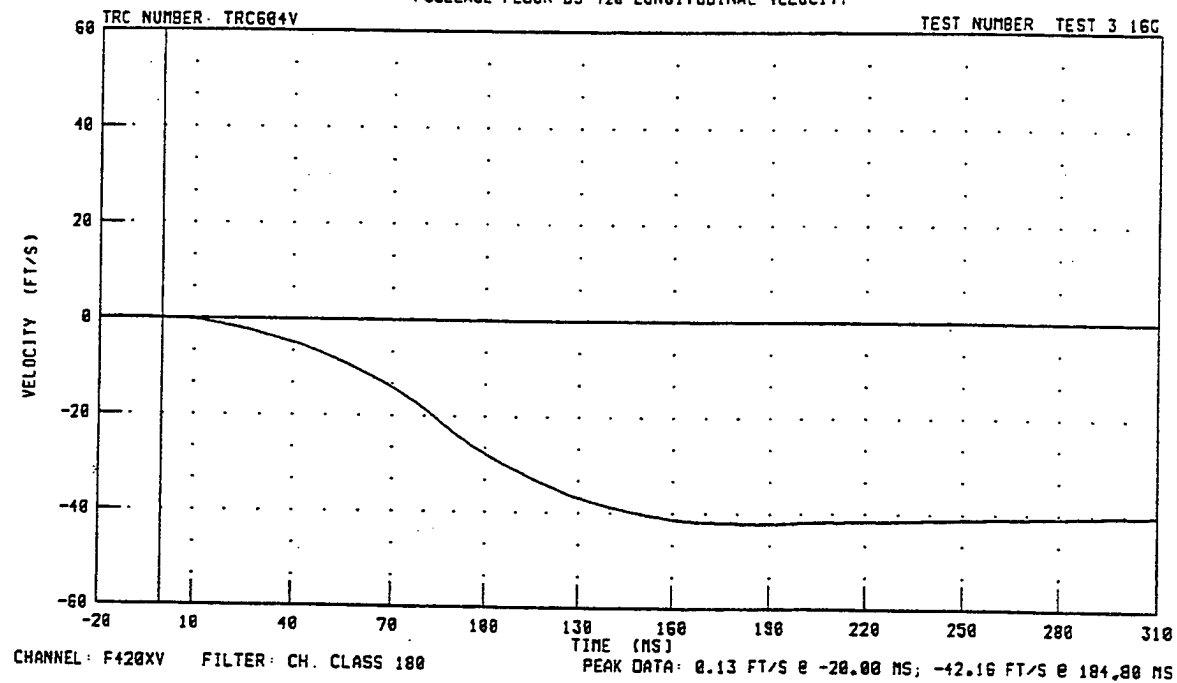
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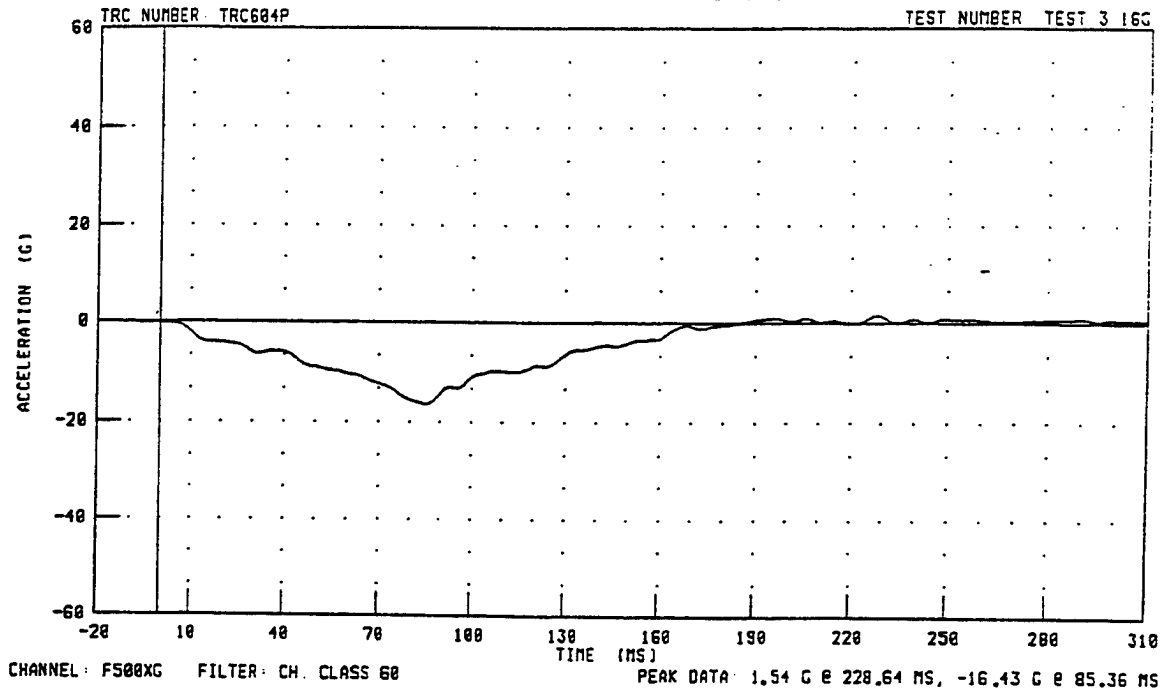
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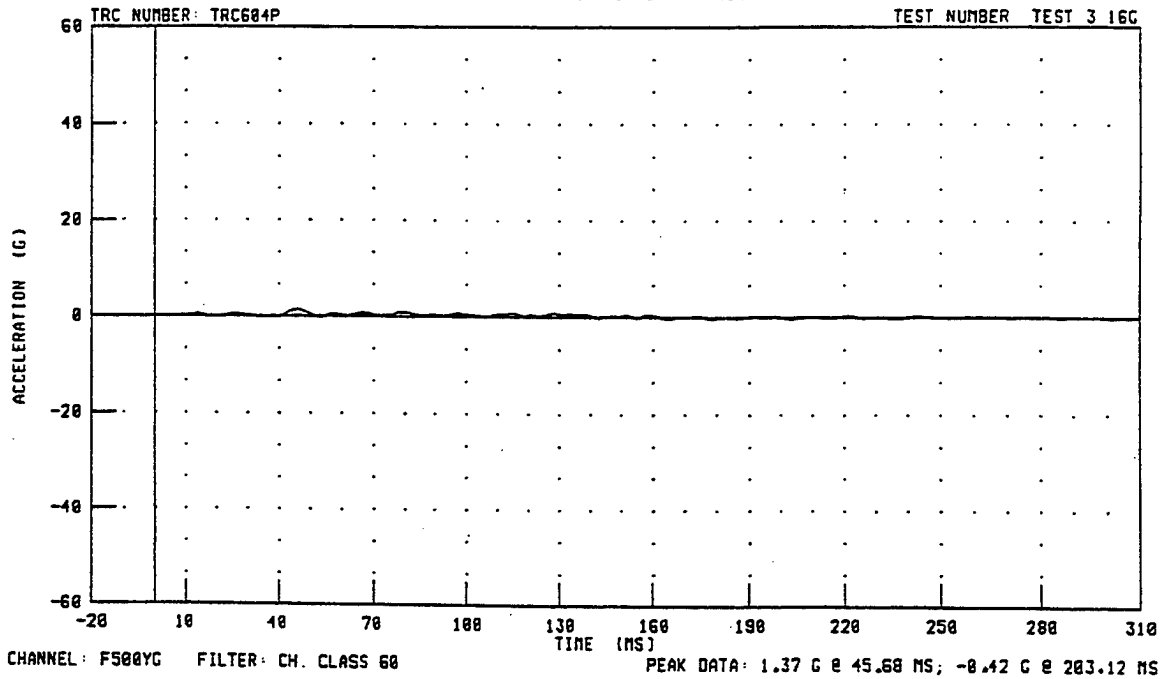
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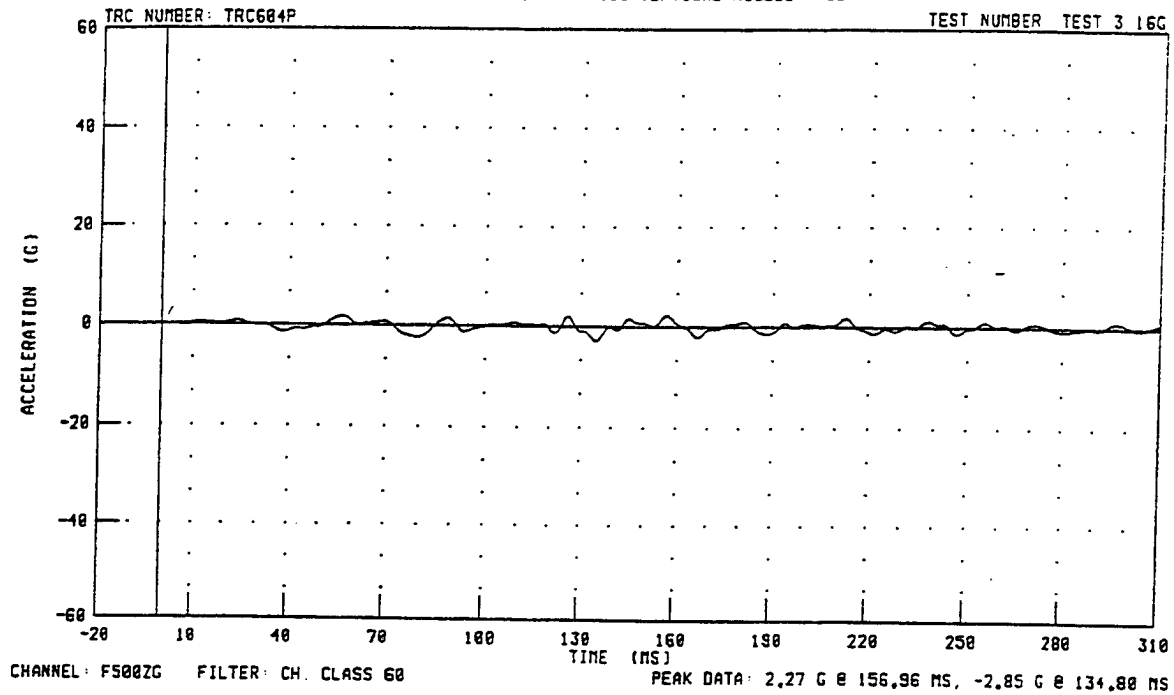
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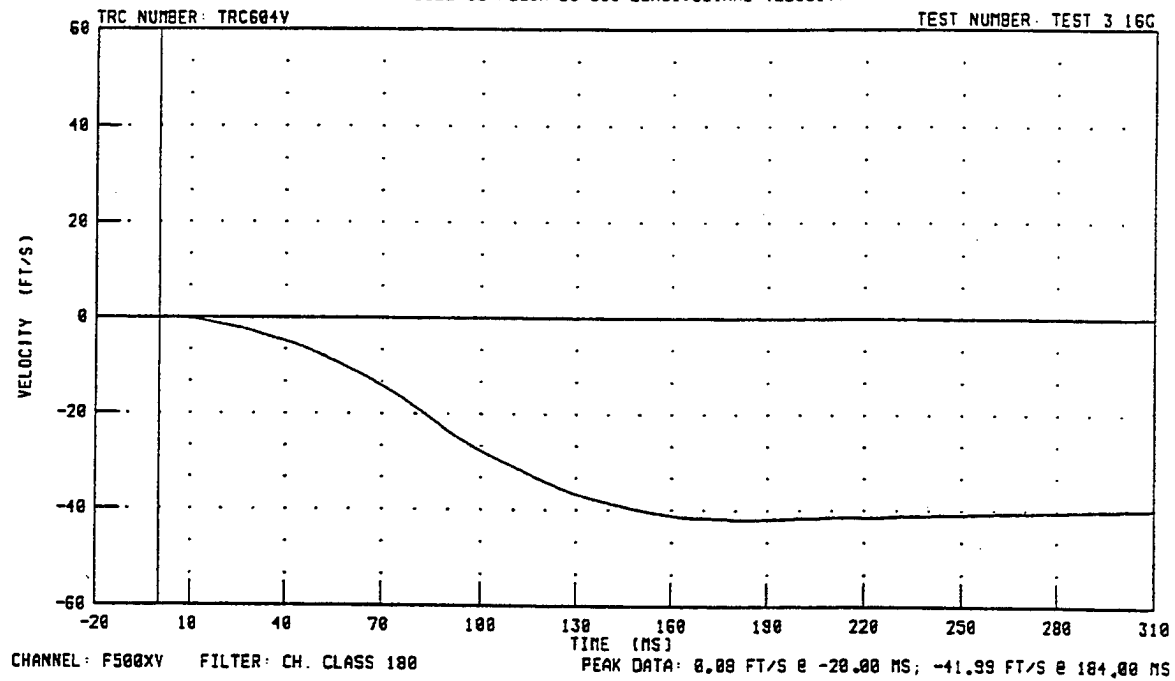
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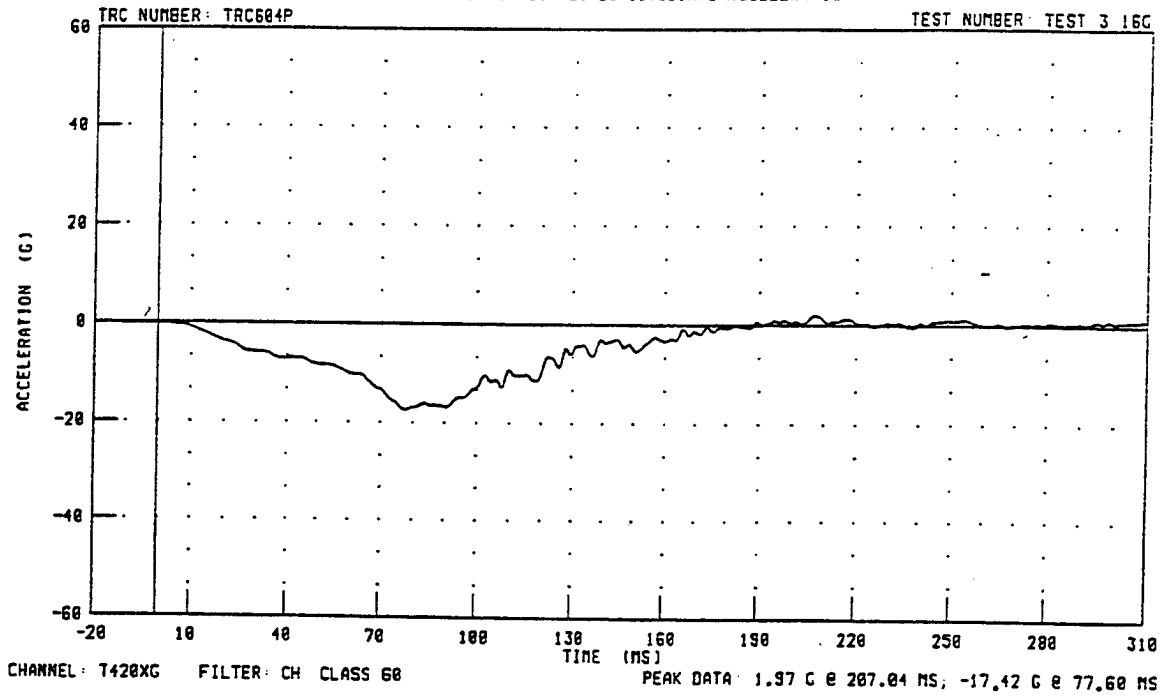
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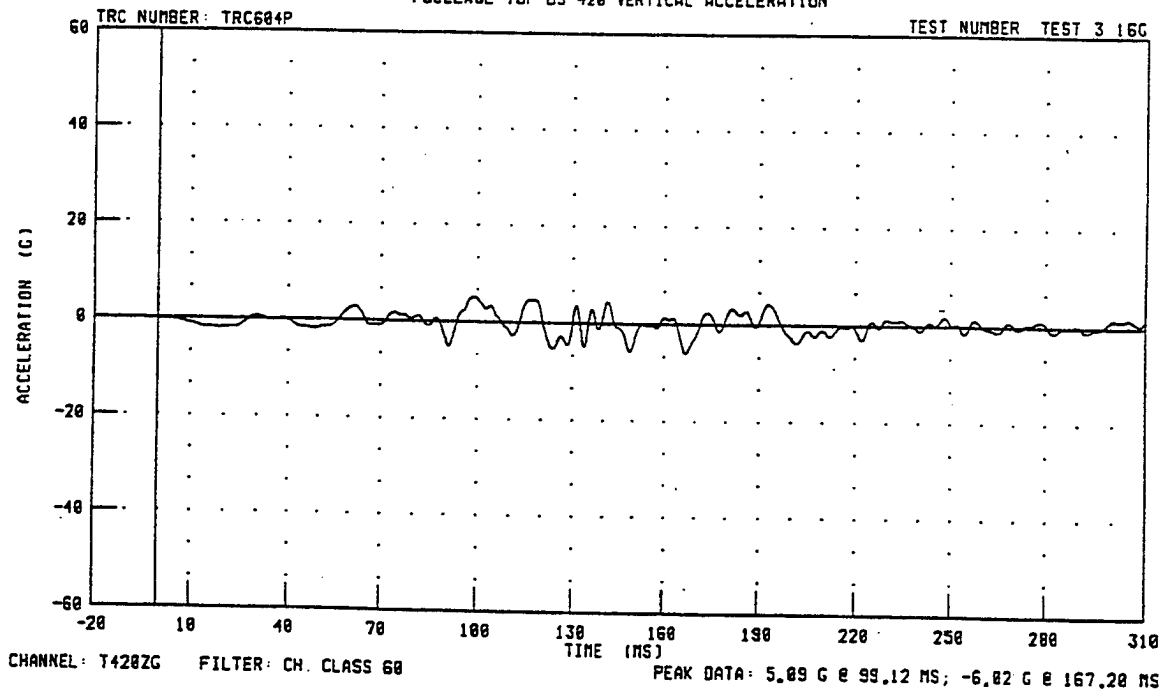
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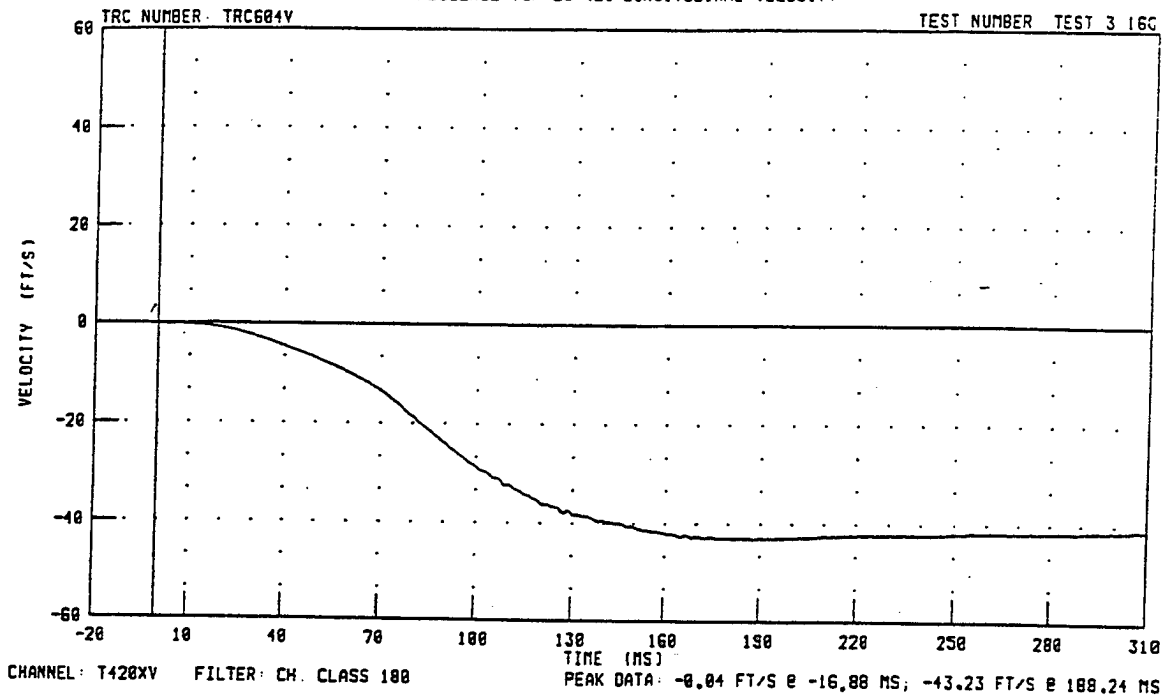
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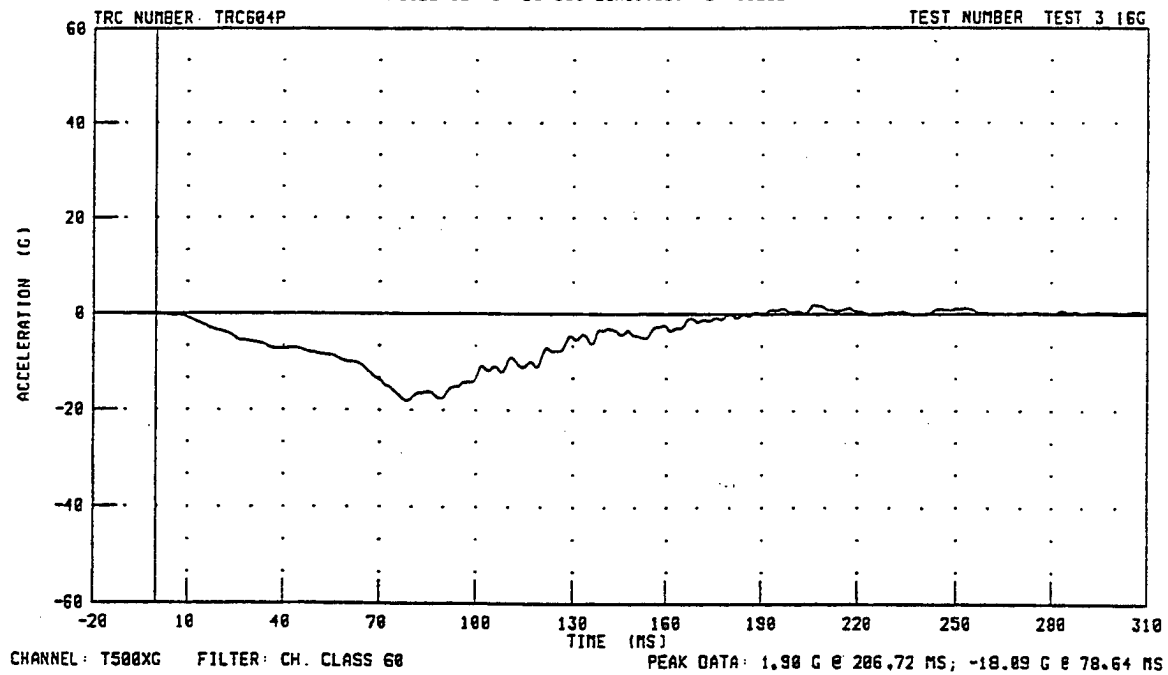
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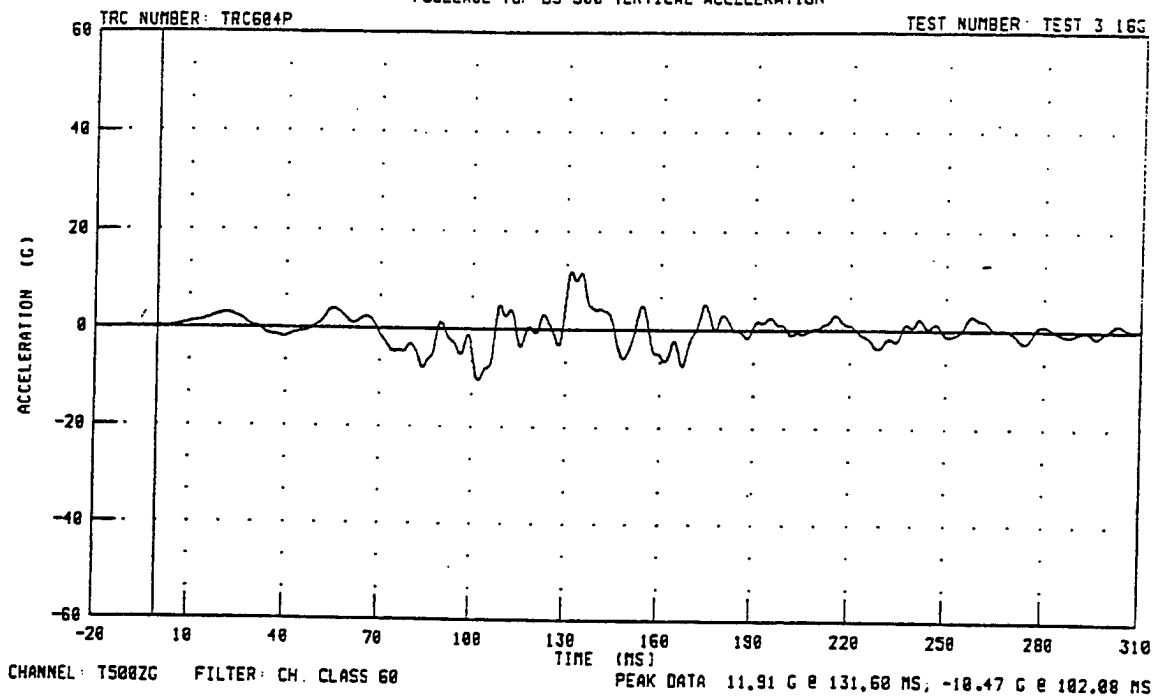
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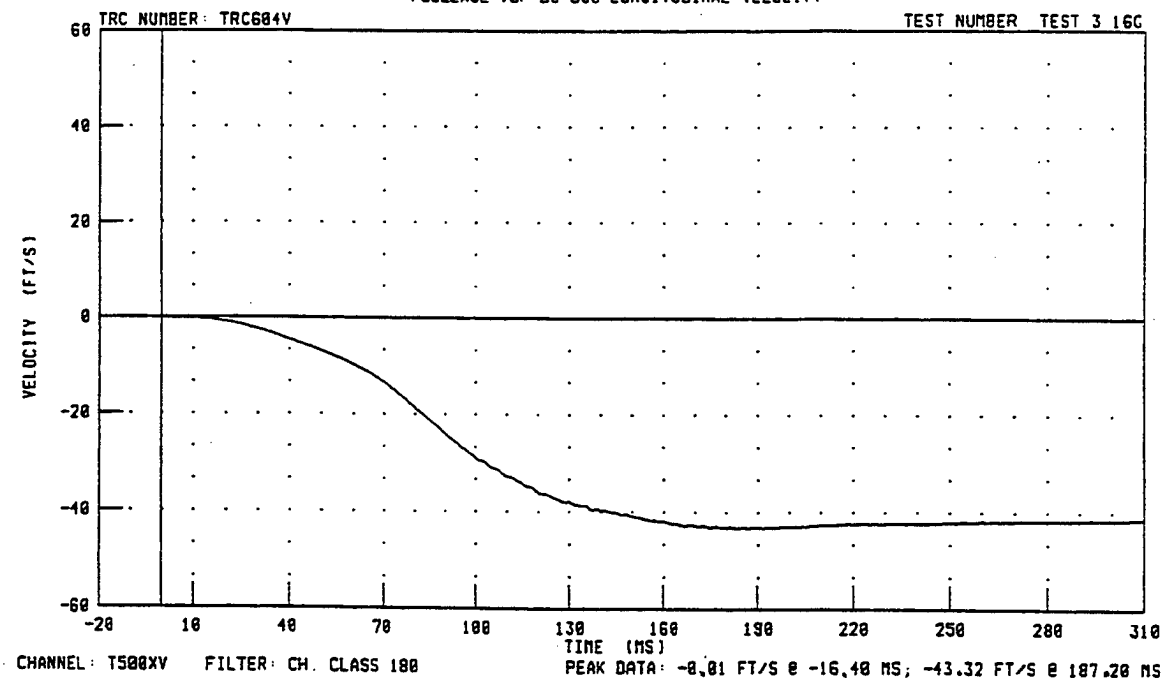
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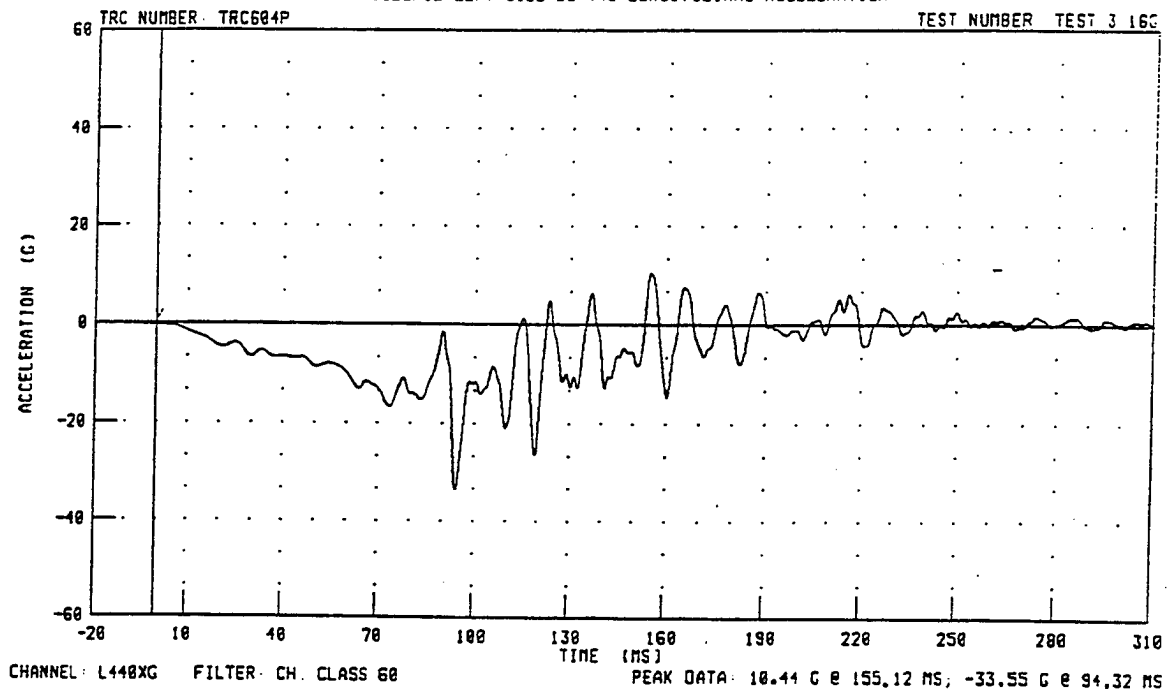
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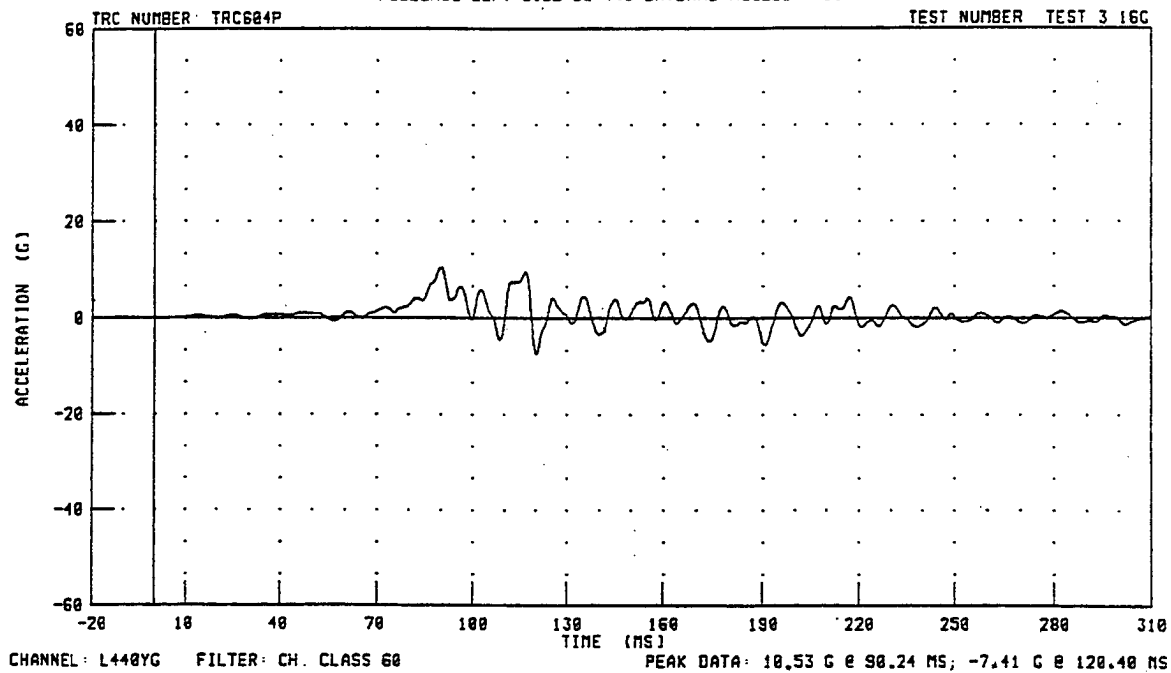
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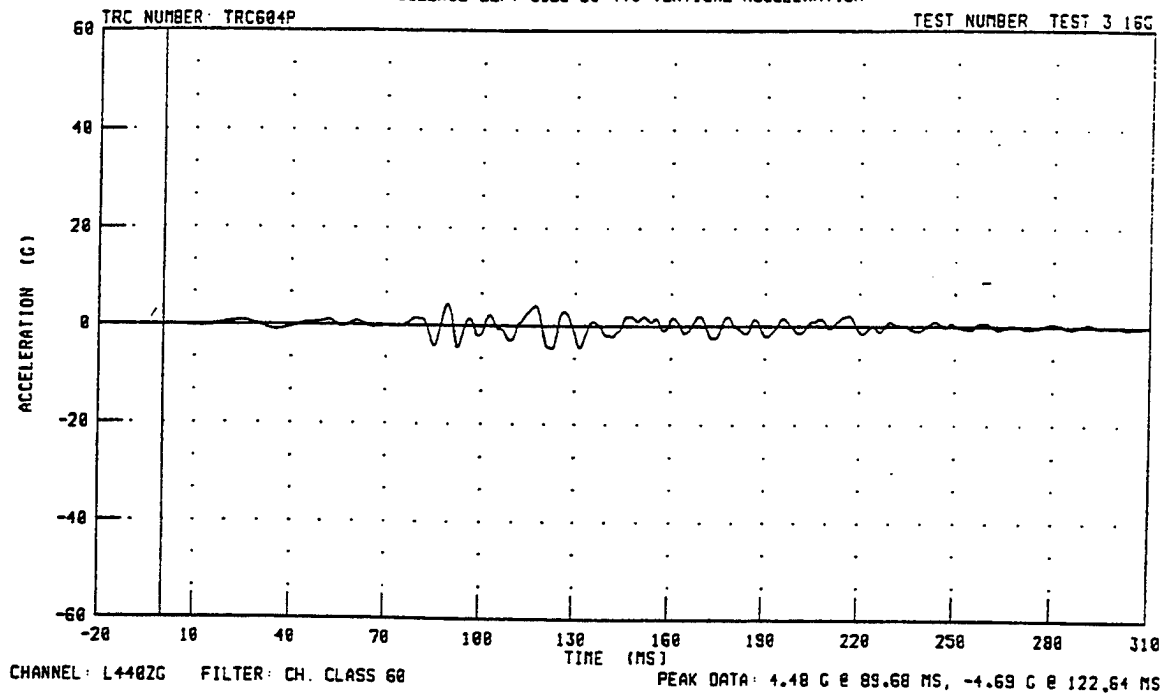
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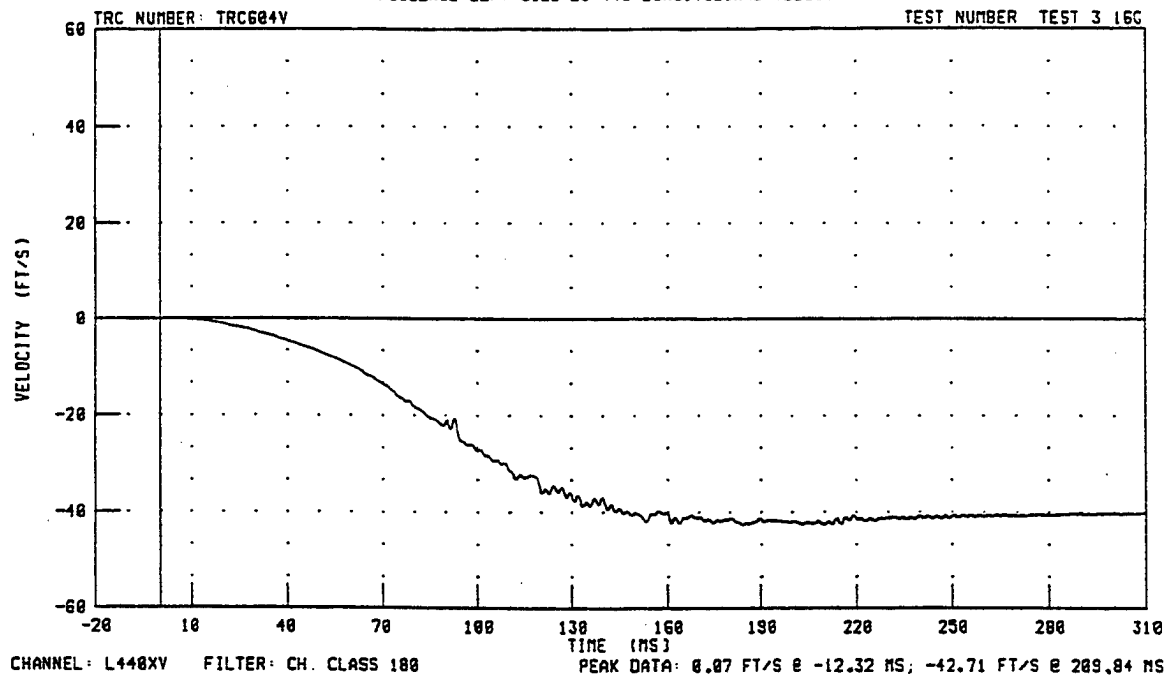
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FUSELAGE LEFT SIDE BS 440 LATERAL ACCELERATION



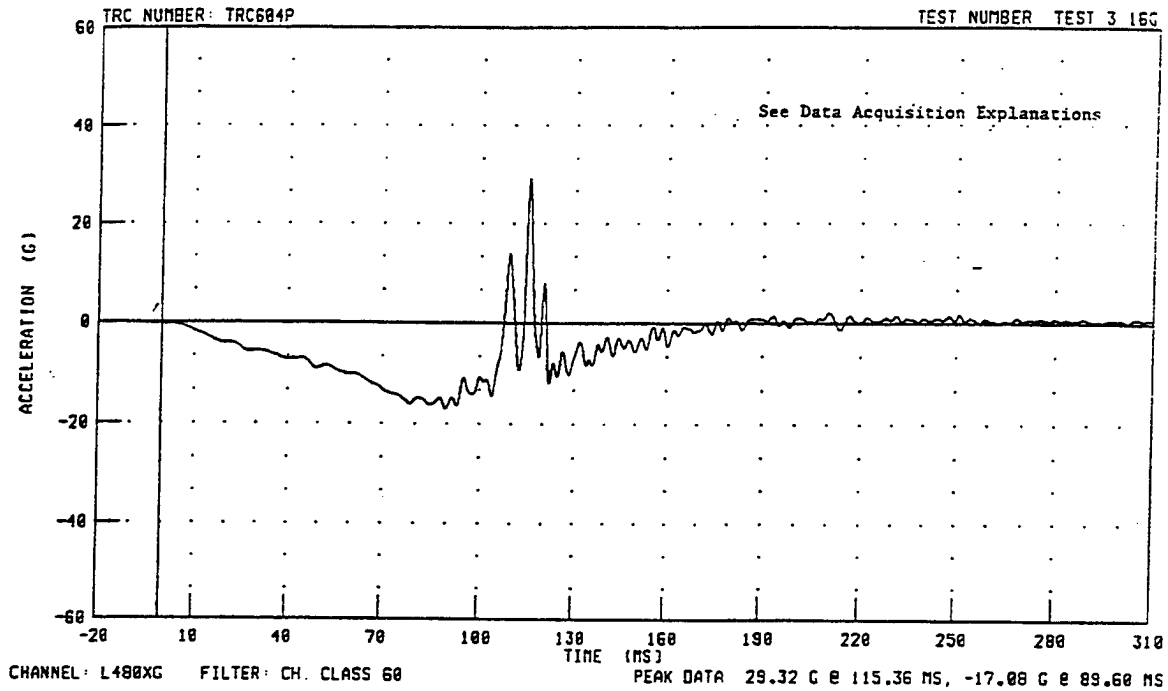
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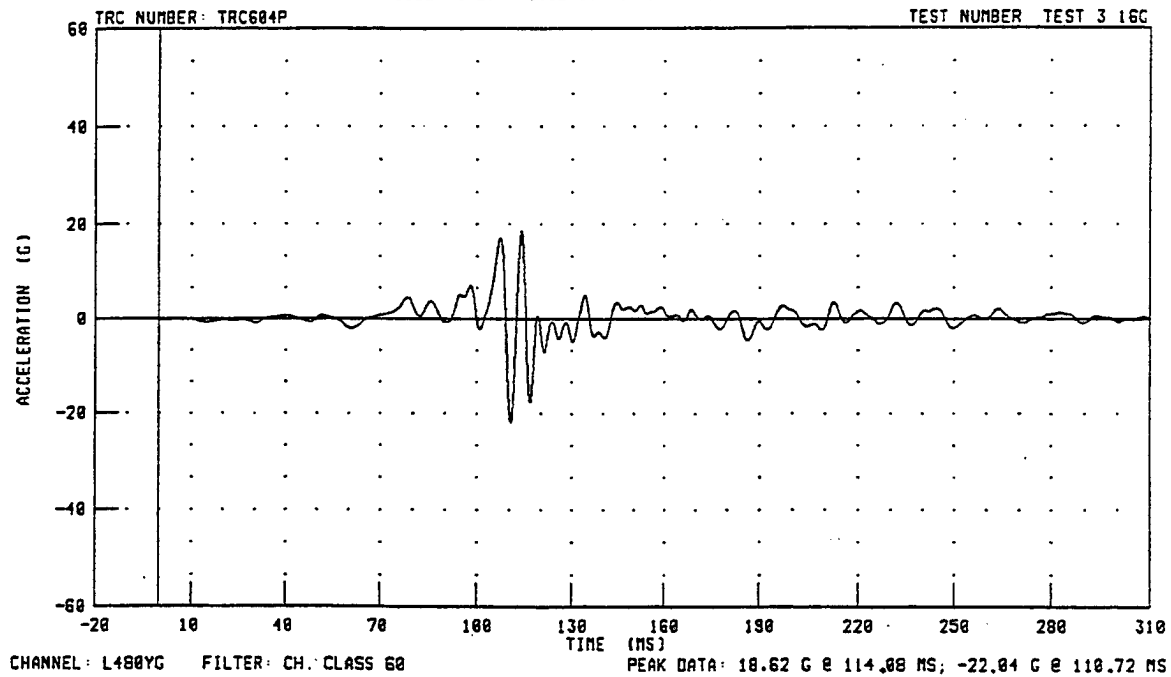
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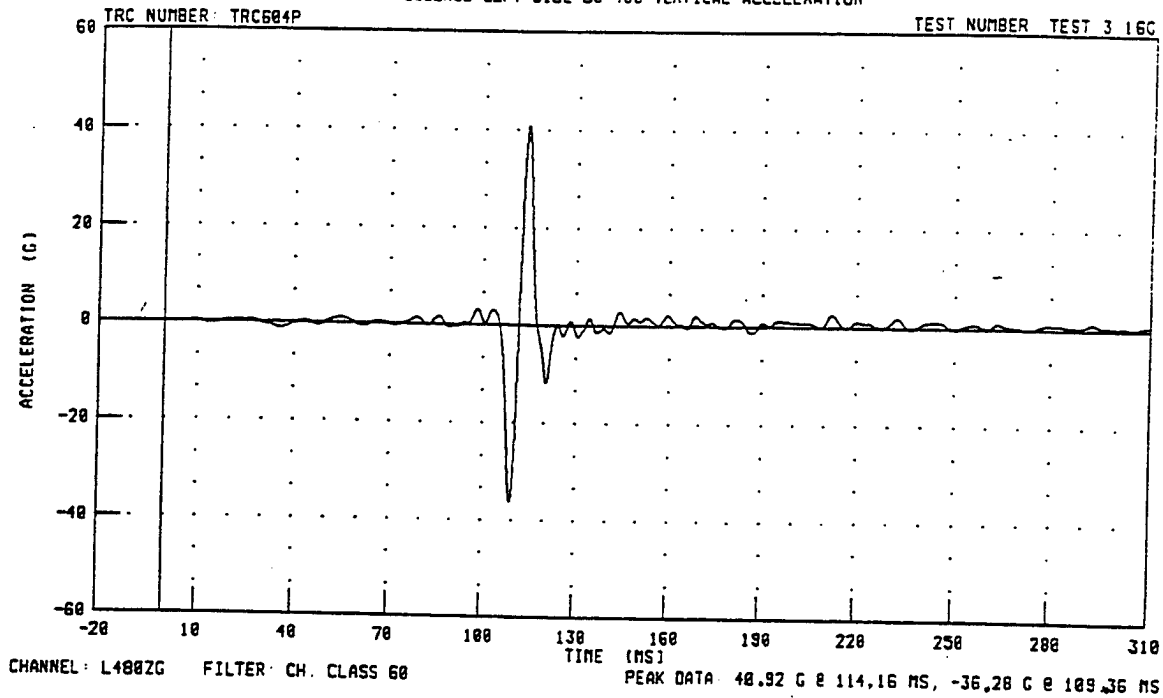
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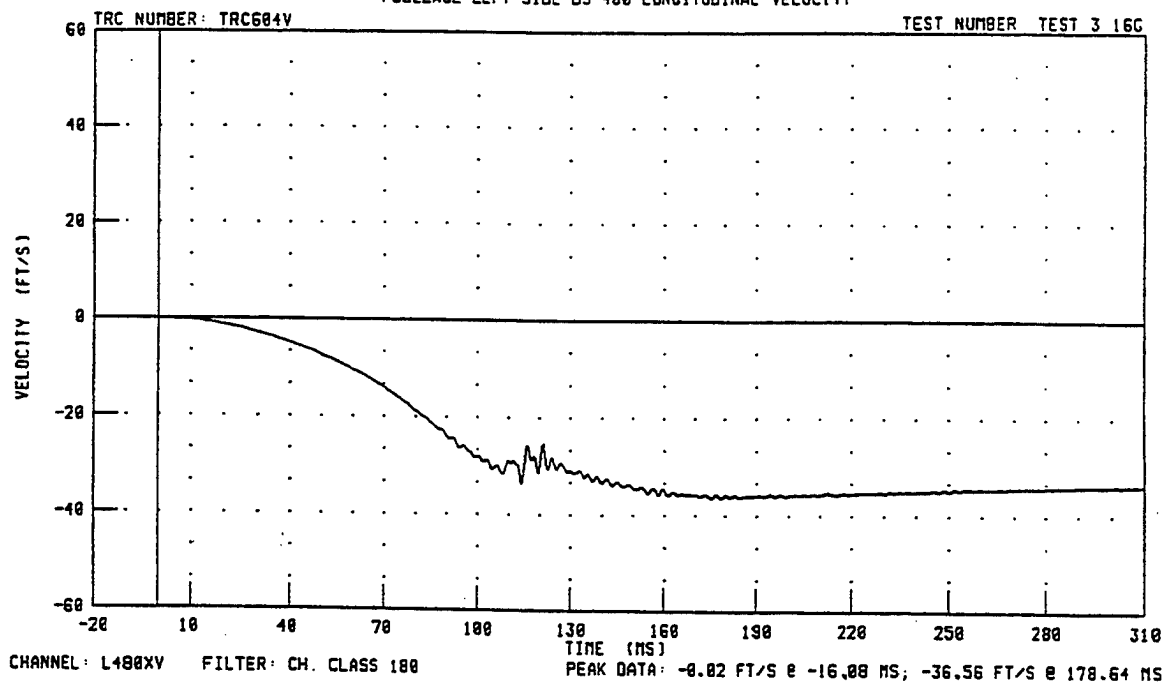
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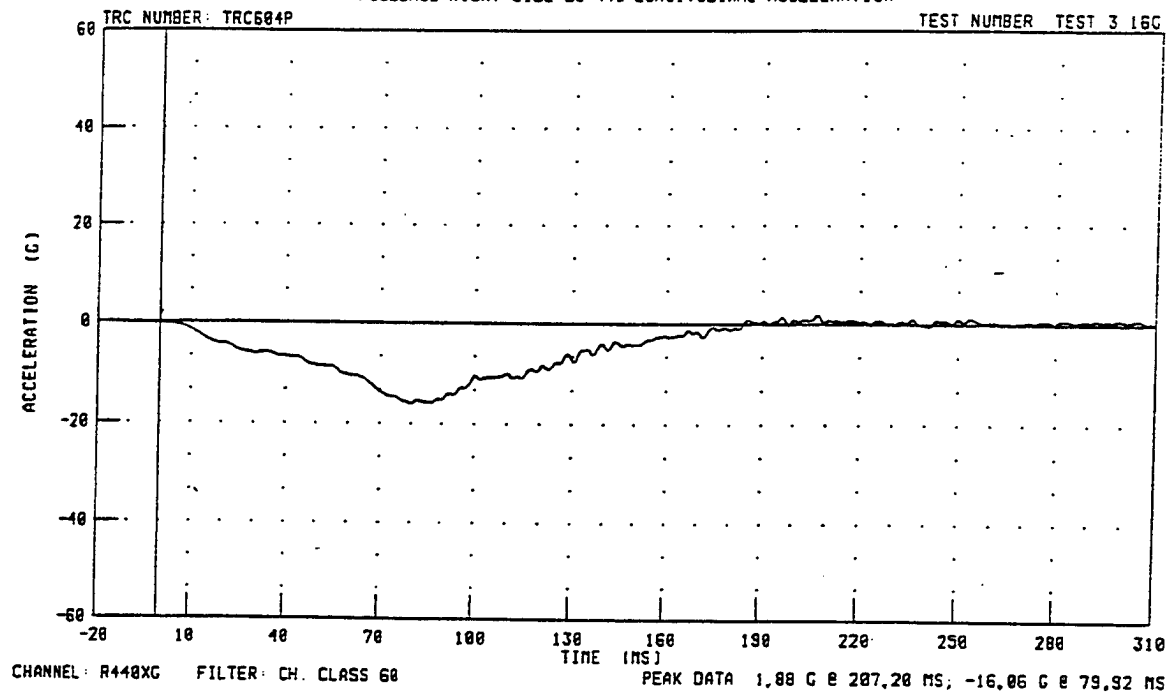
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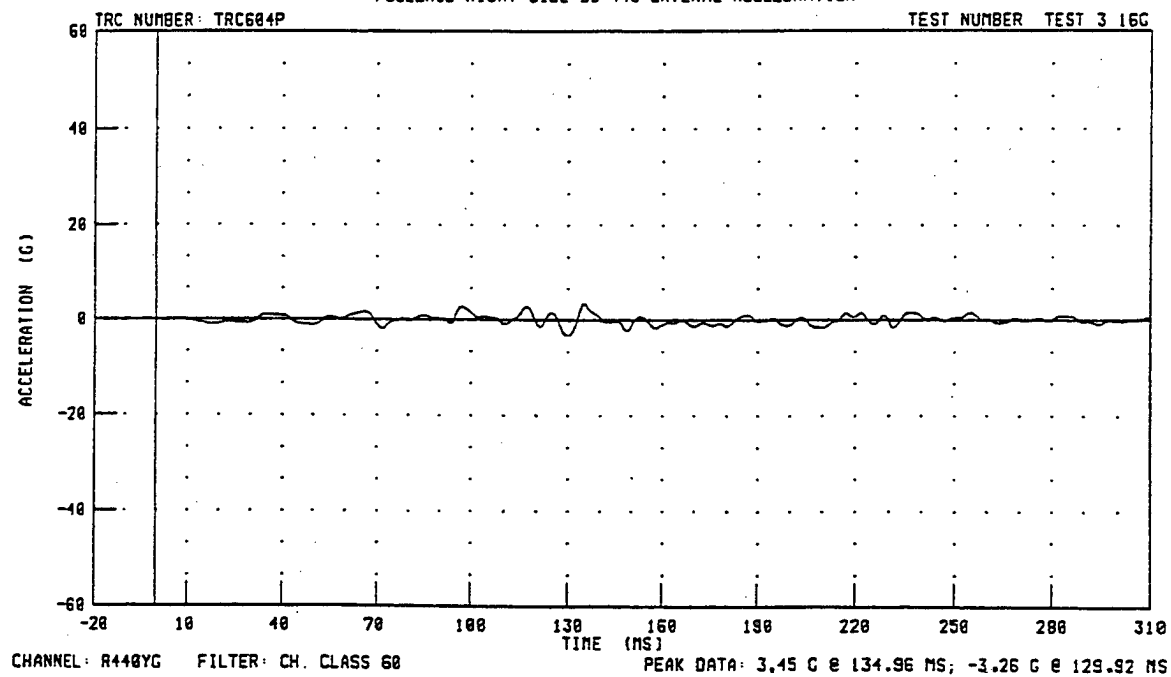
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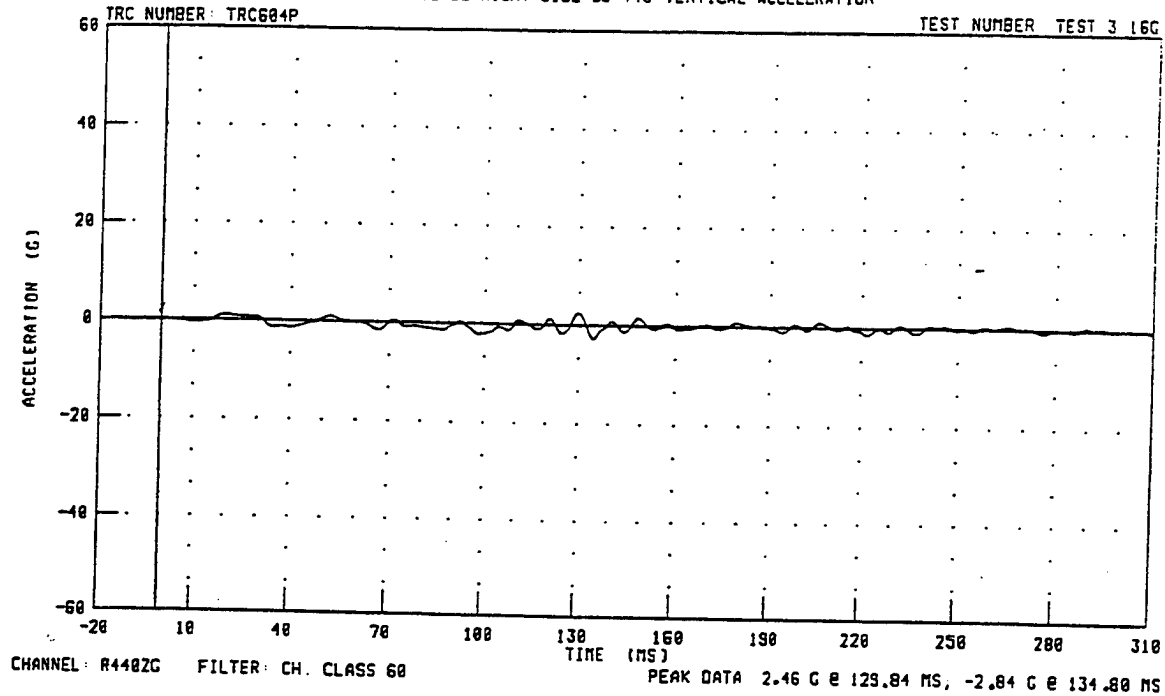
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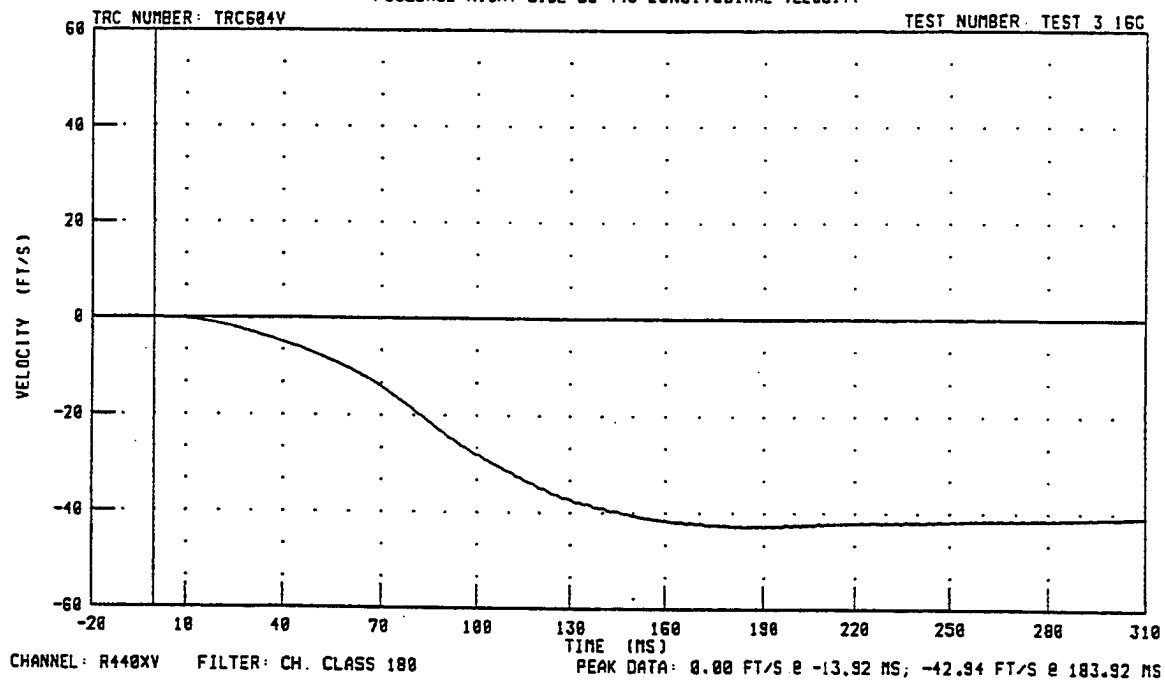
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FUSELAGE RIGHT SIDE BS 440 LATERAL ACCELERATION



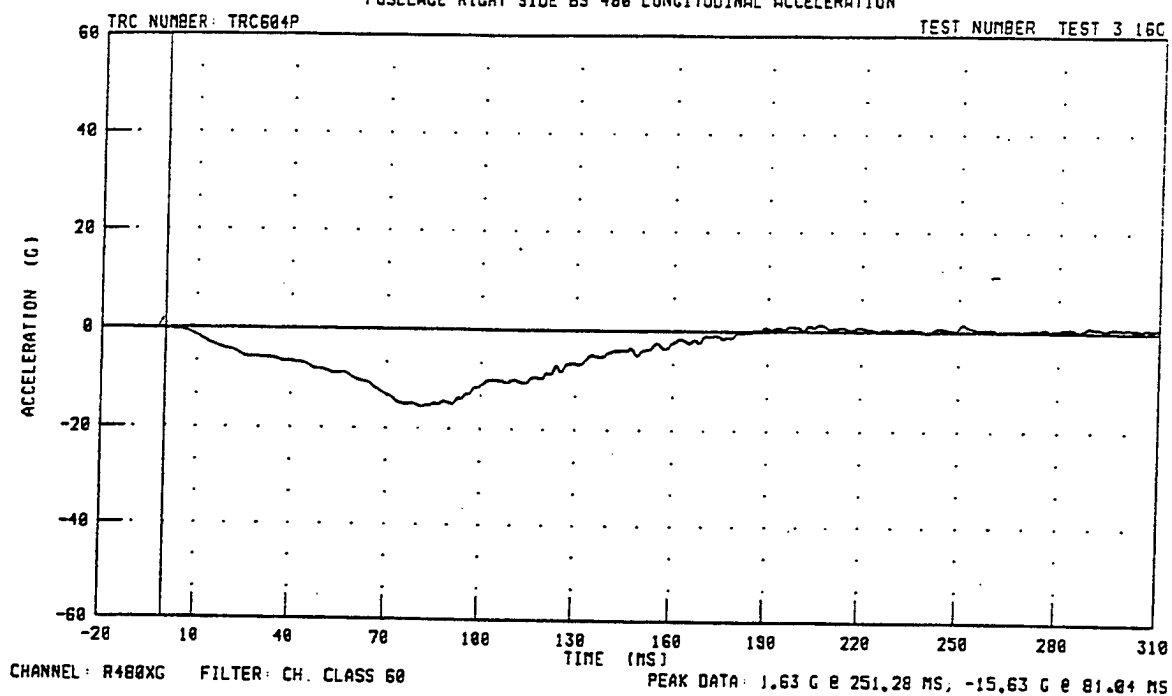
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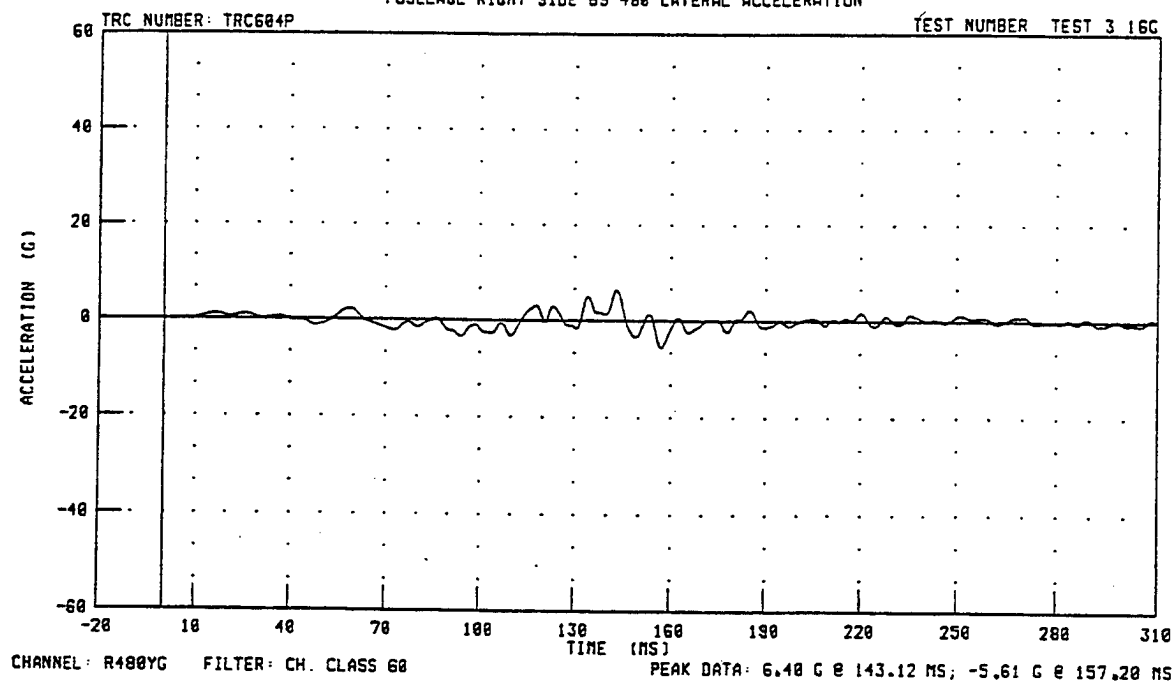
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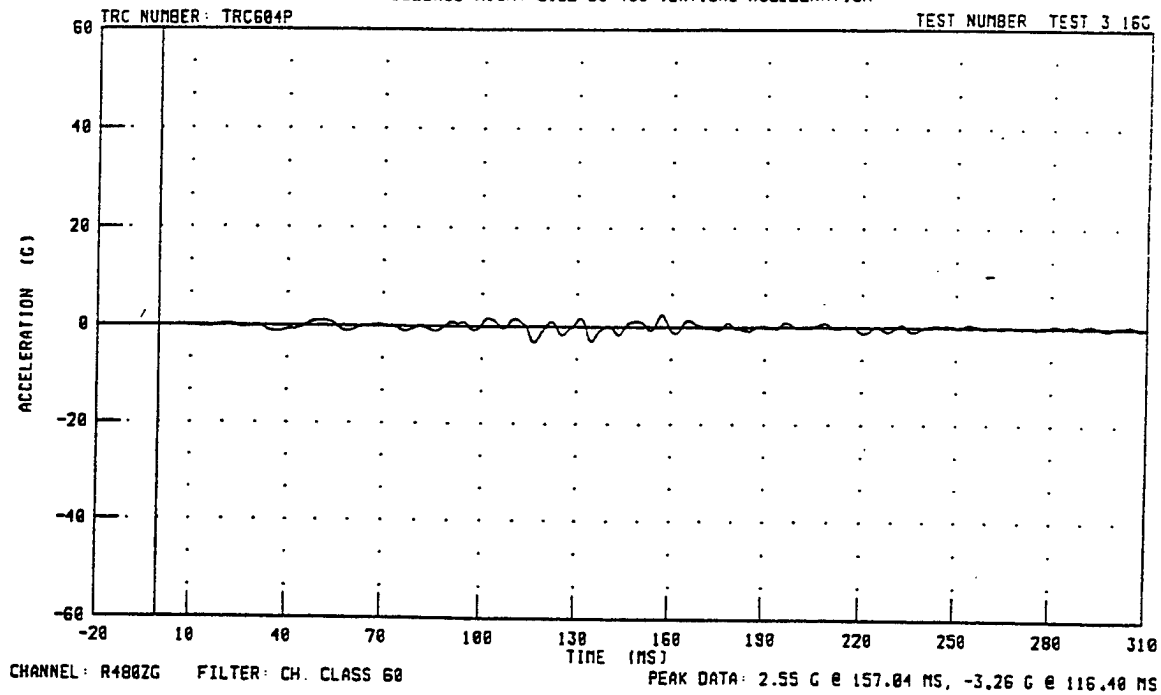
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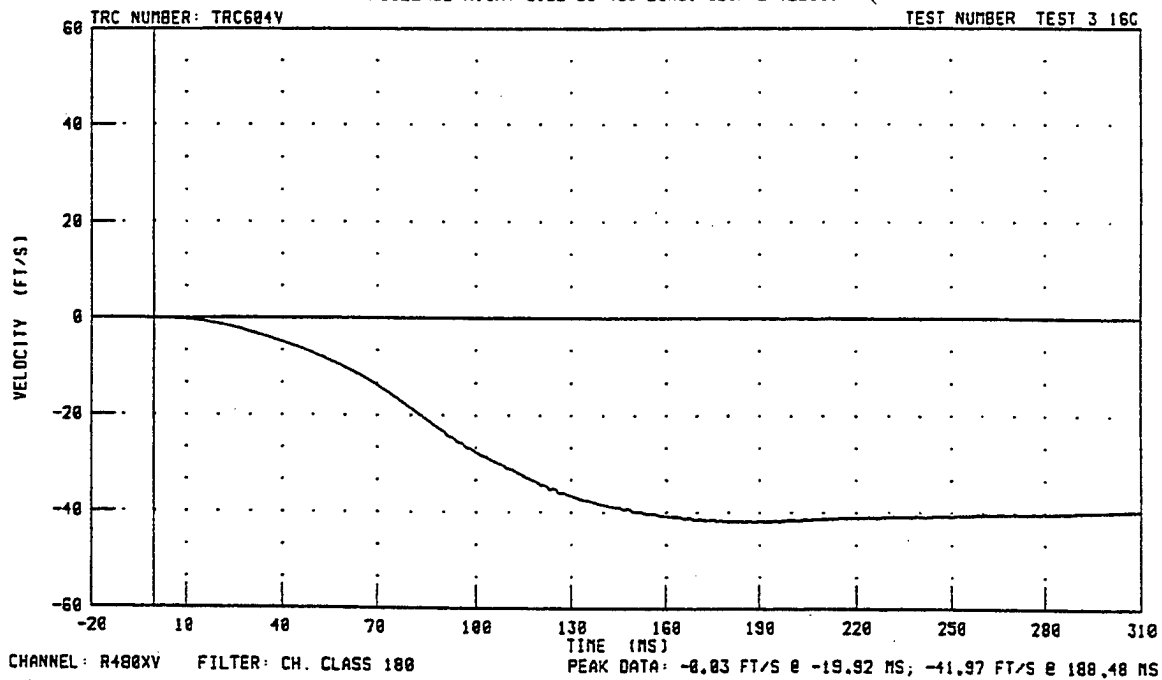
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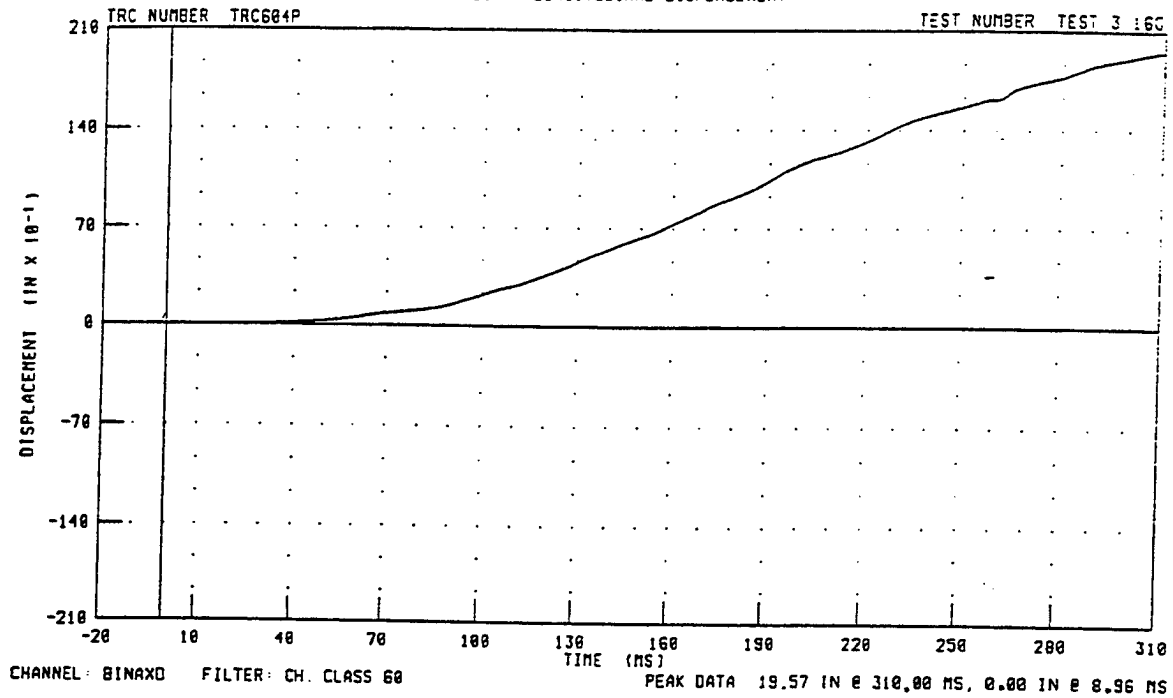
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FUSELAGE RIGHT SIDE BS 480 VERTICAL ACCELERATION



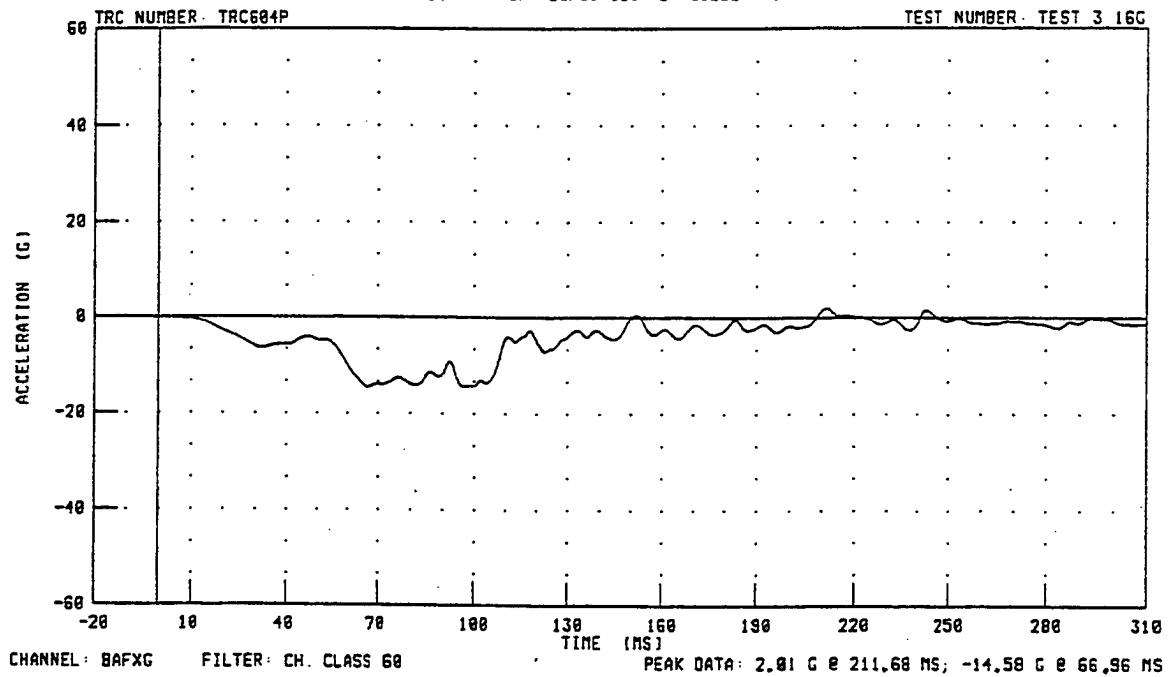
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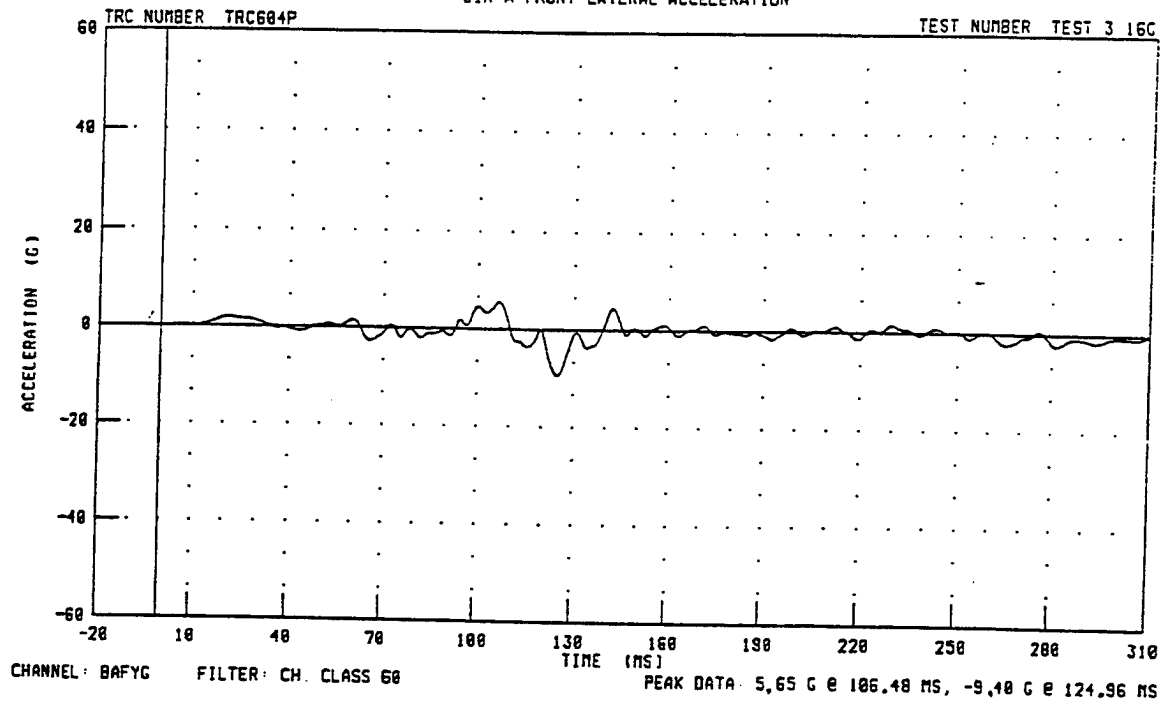
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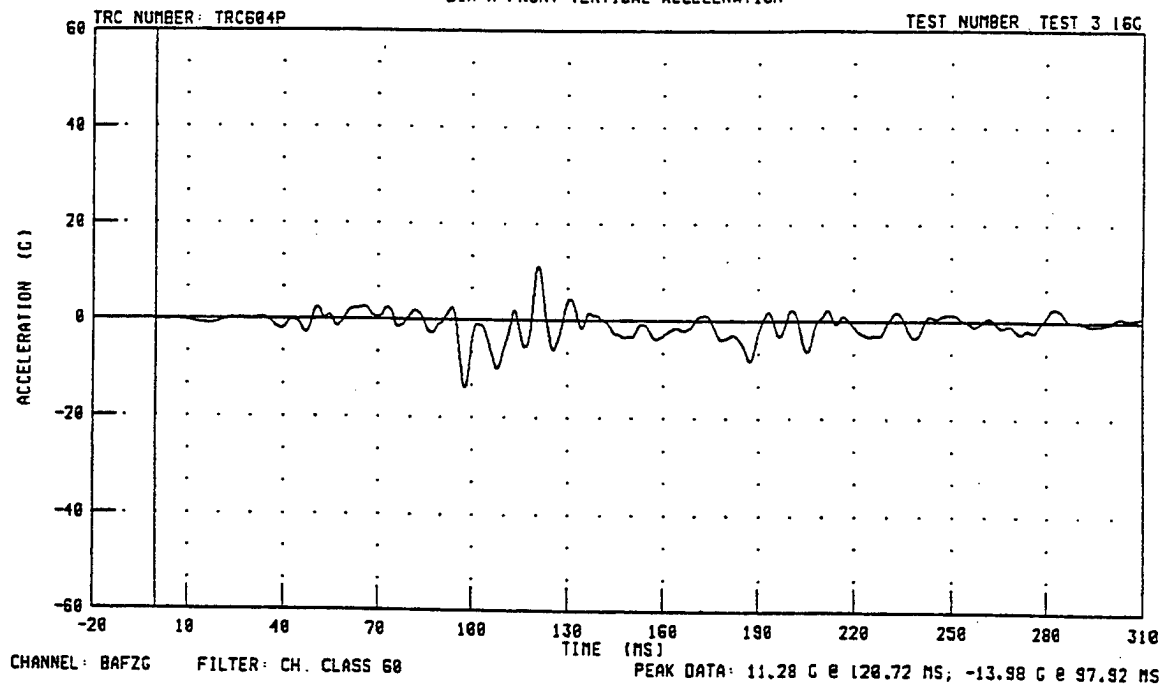
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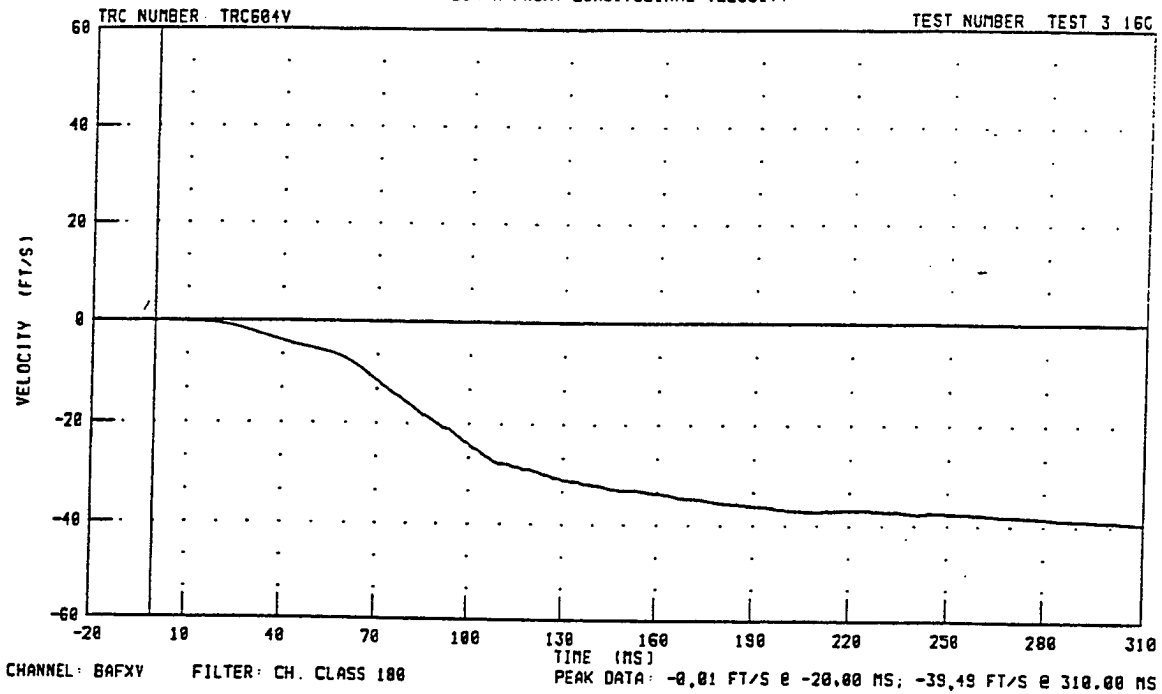
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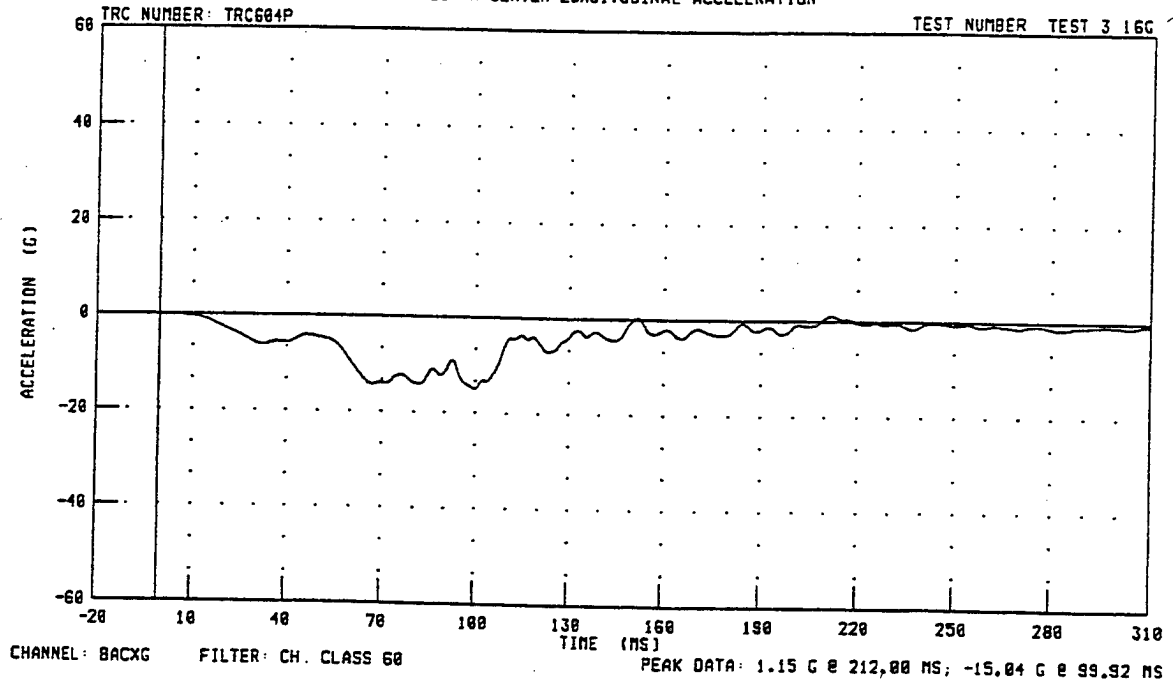
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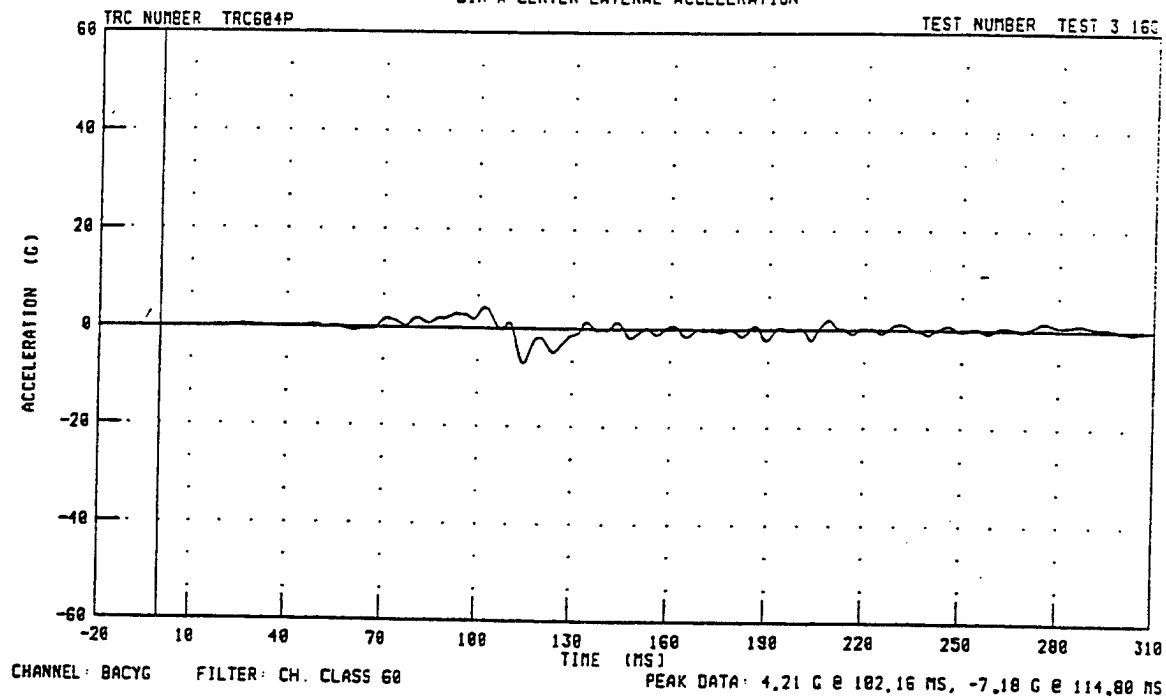
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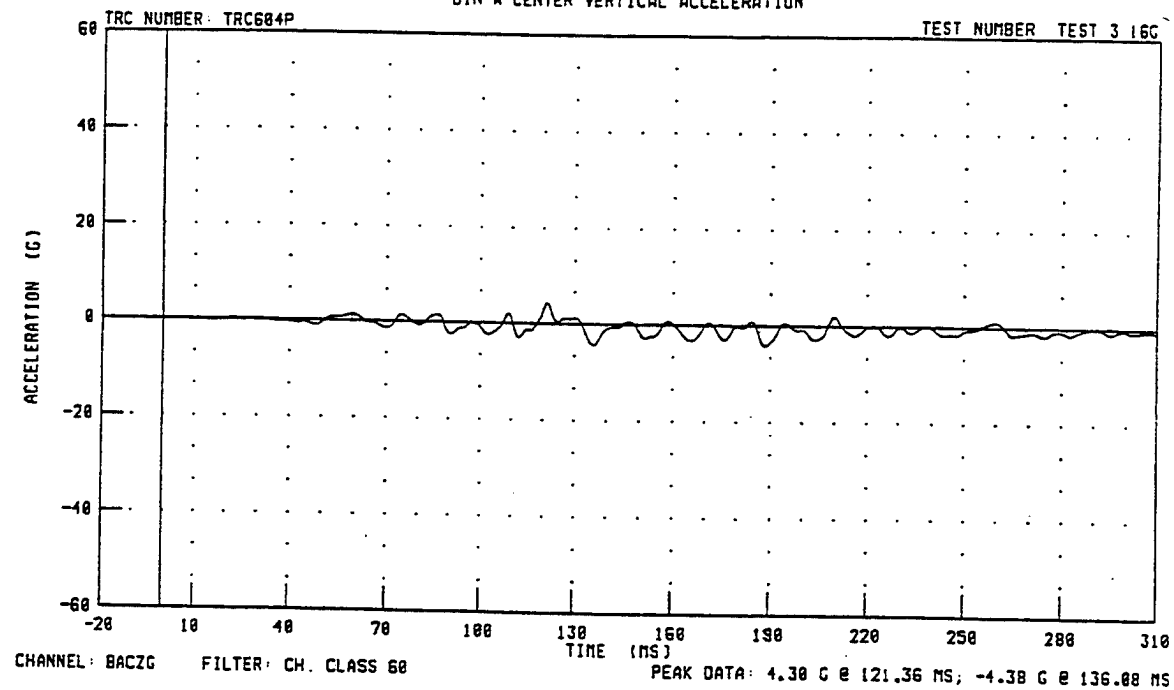
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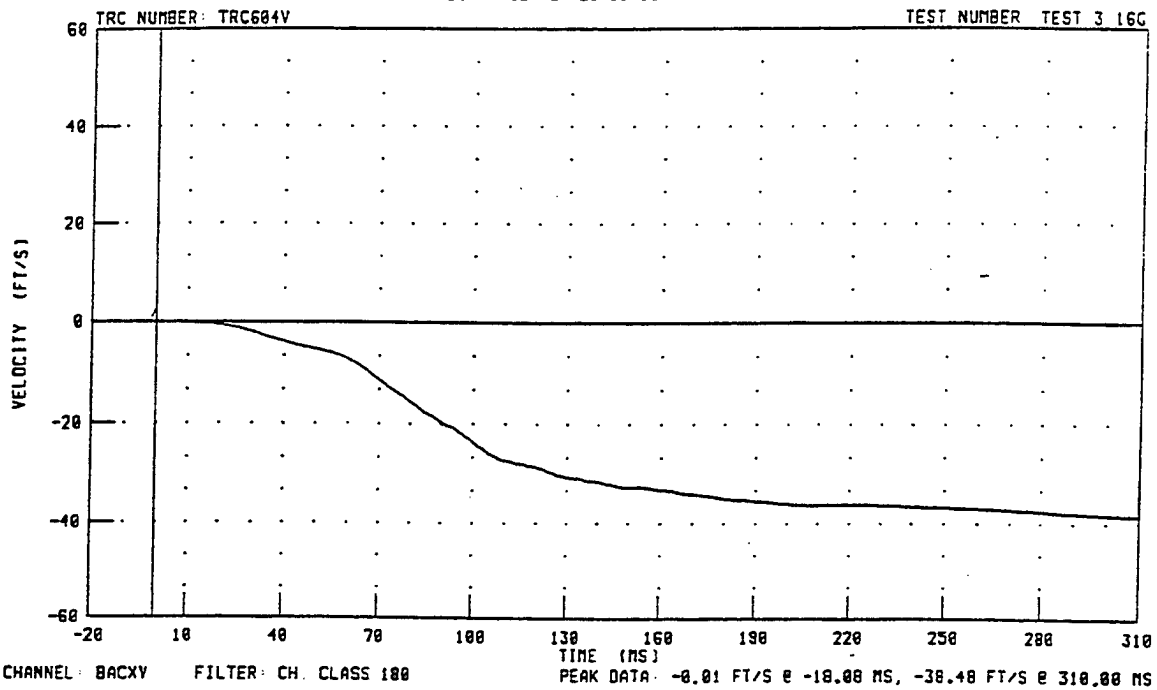
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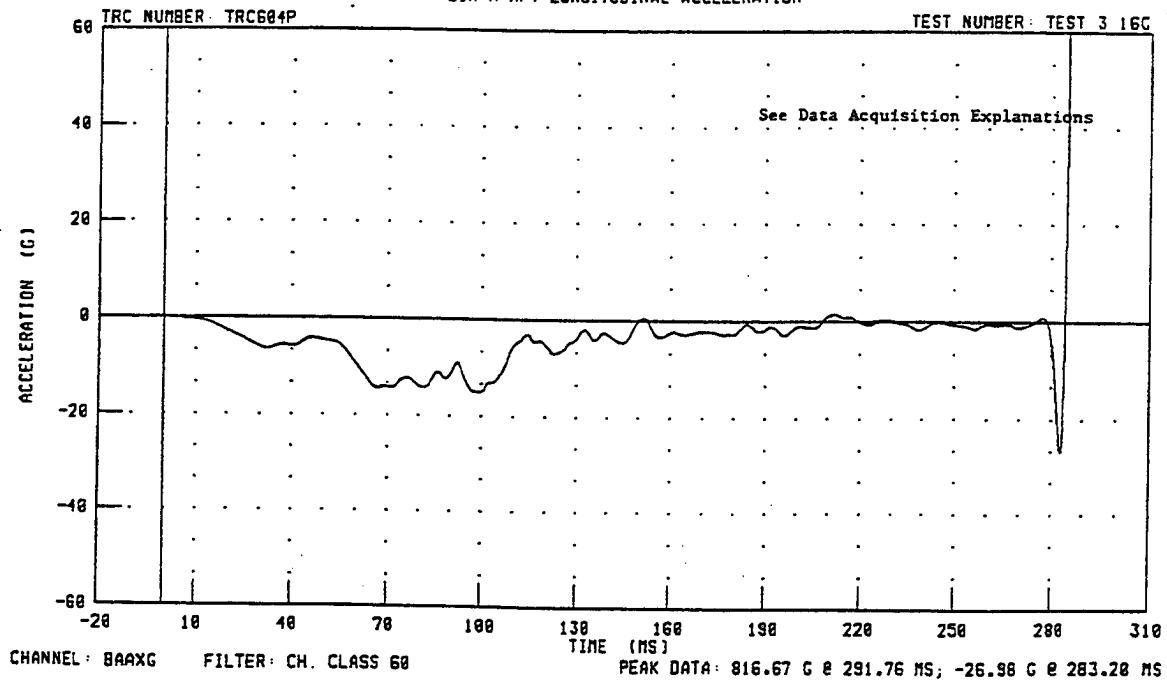
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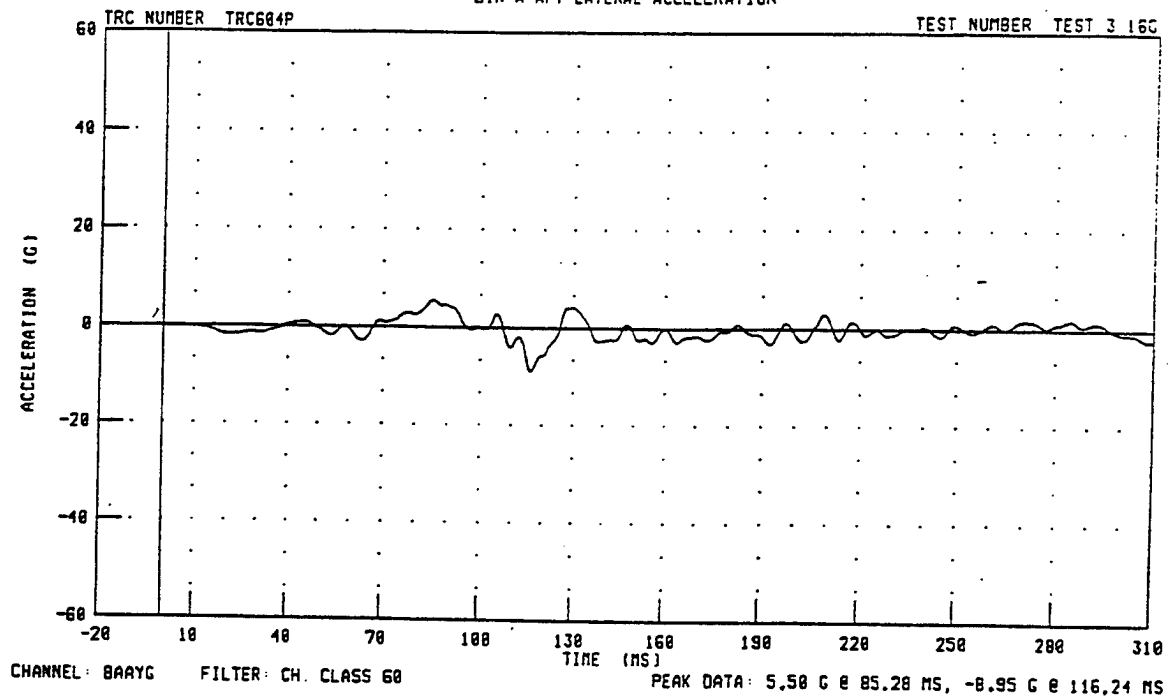
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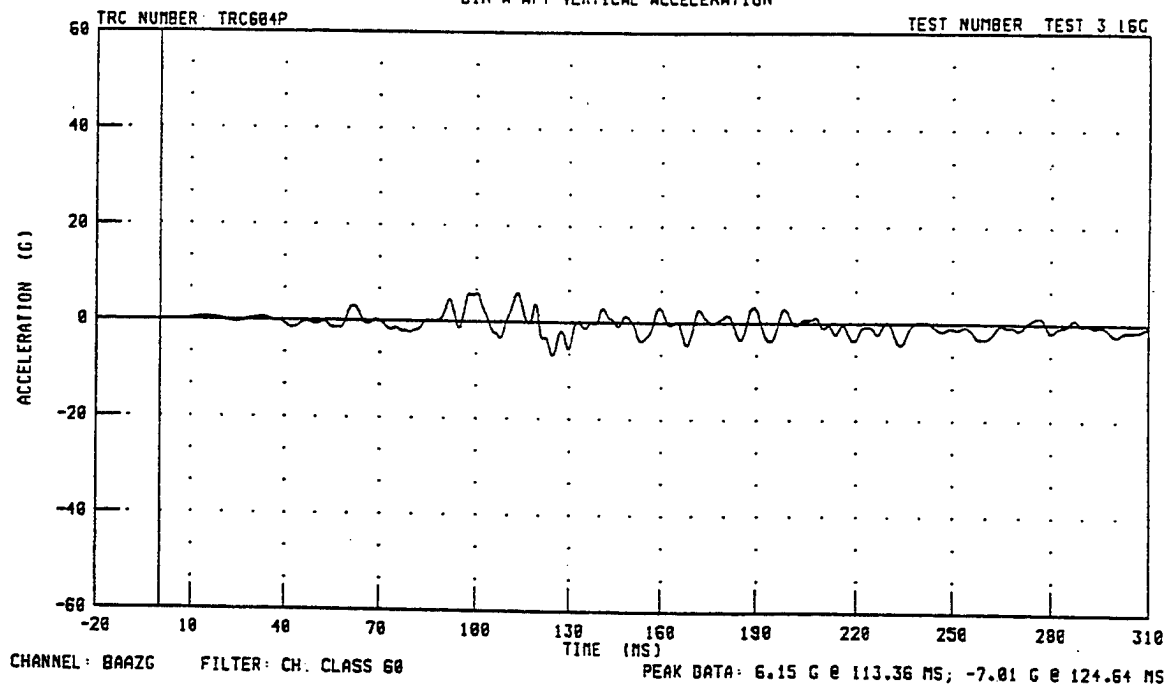
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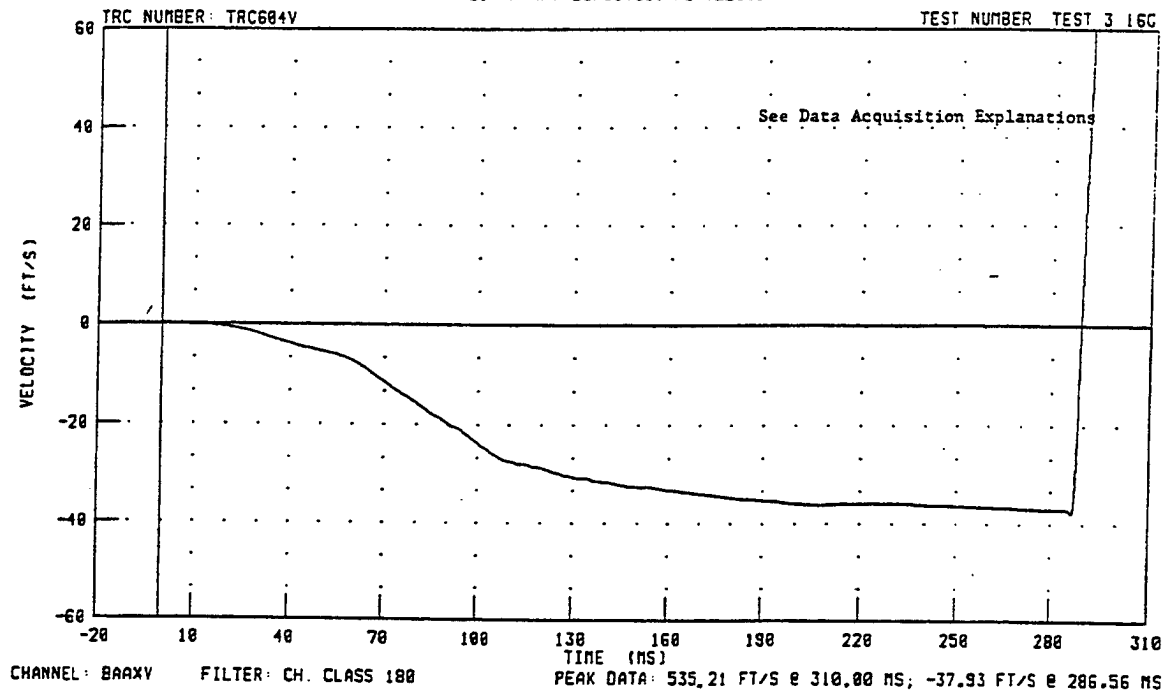
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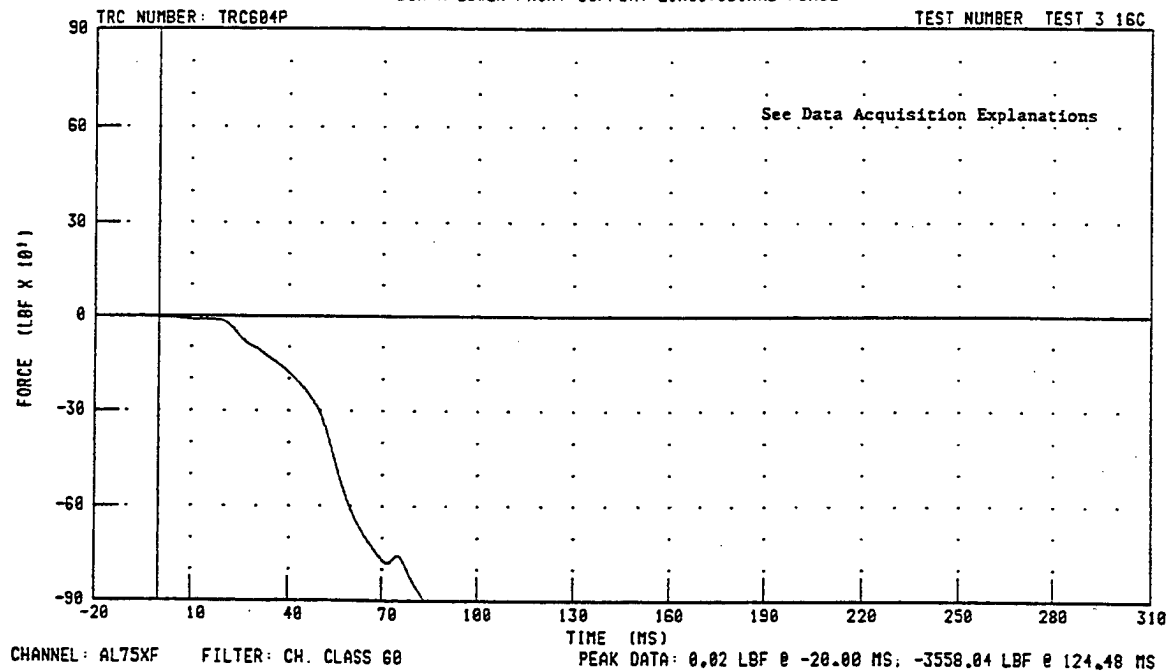
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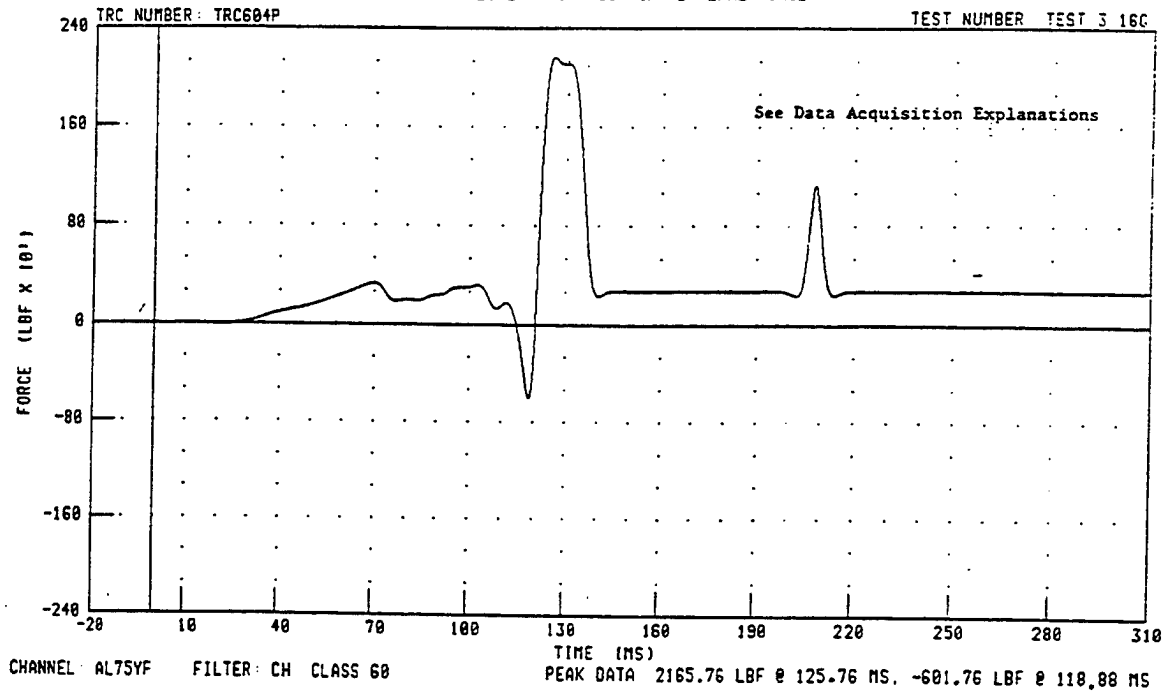
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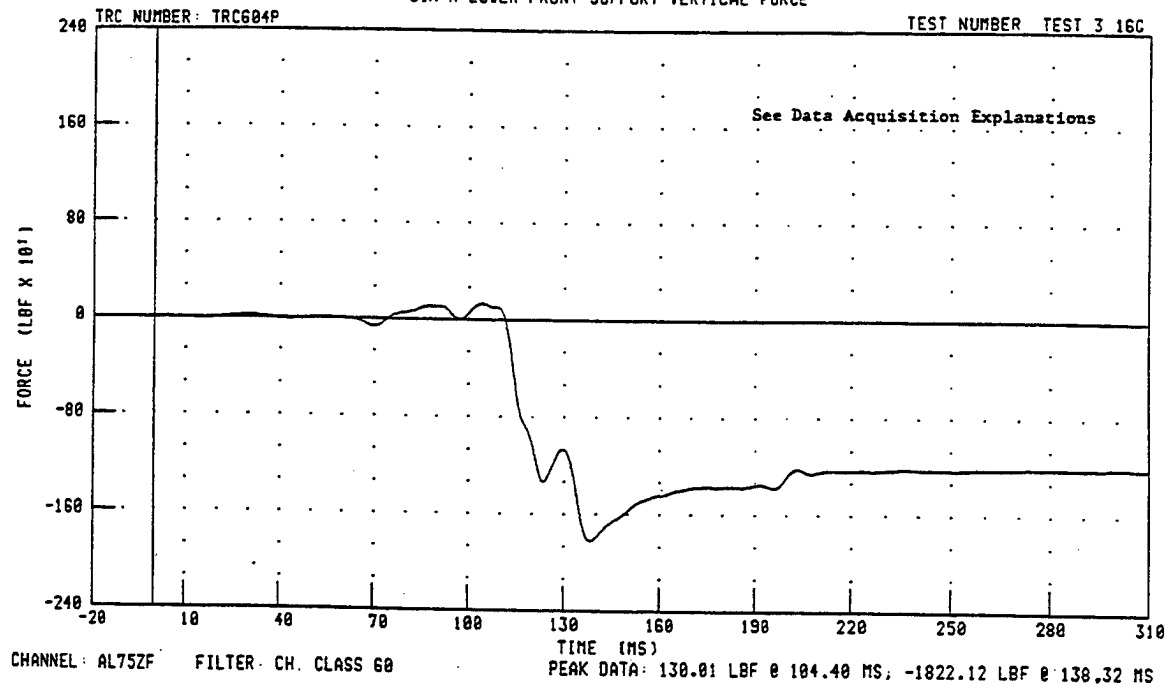
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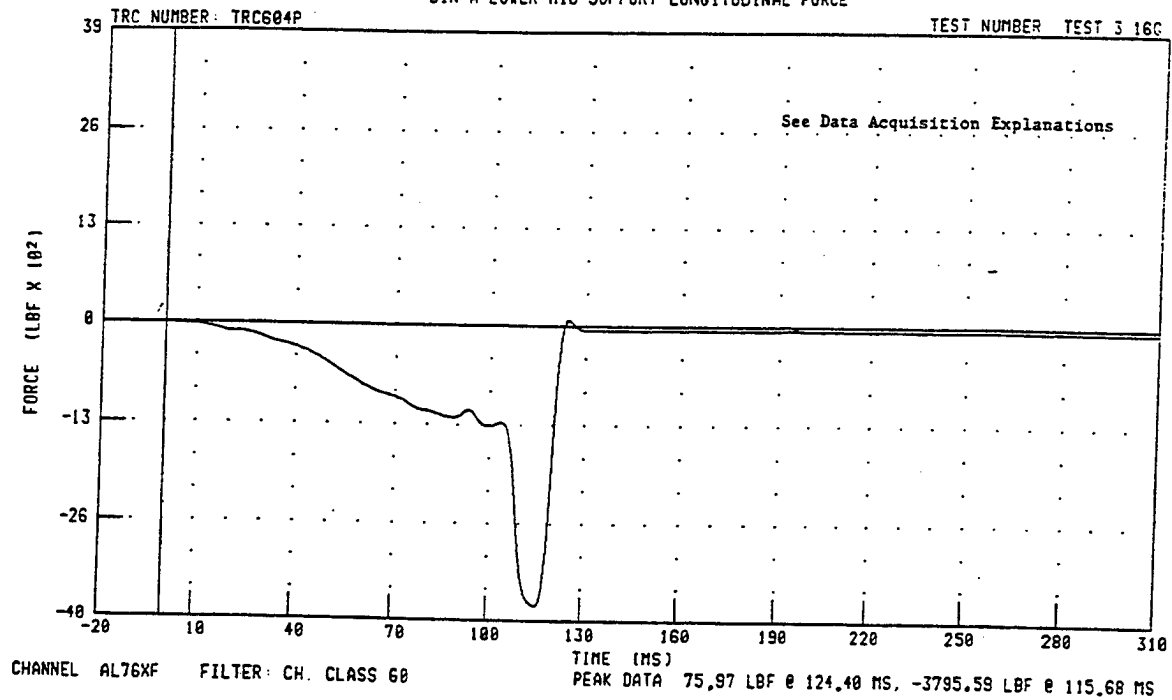
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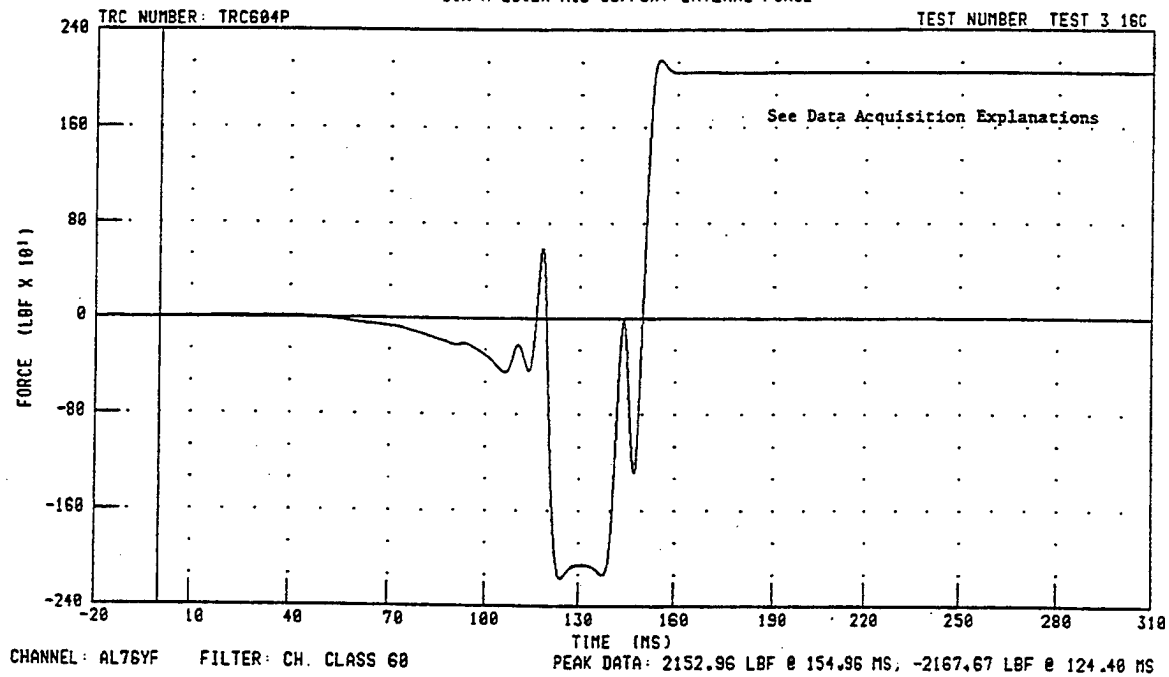
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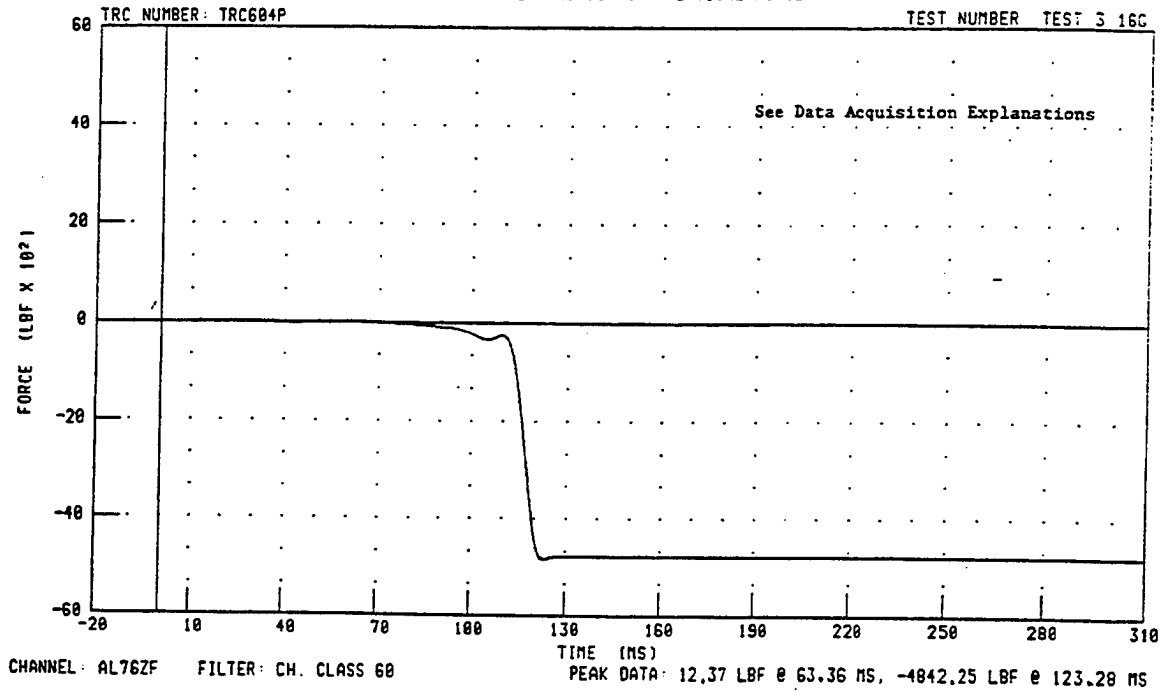
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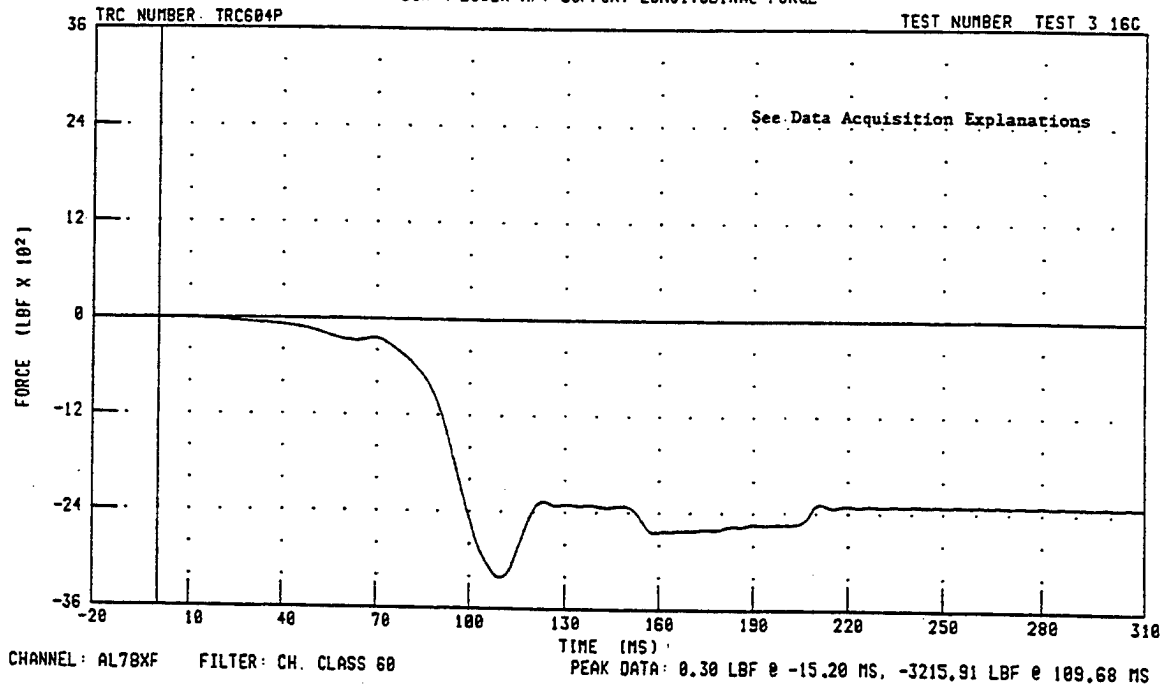
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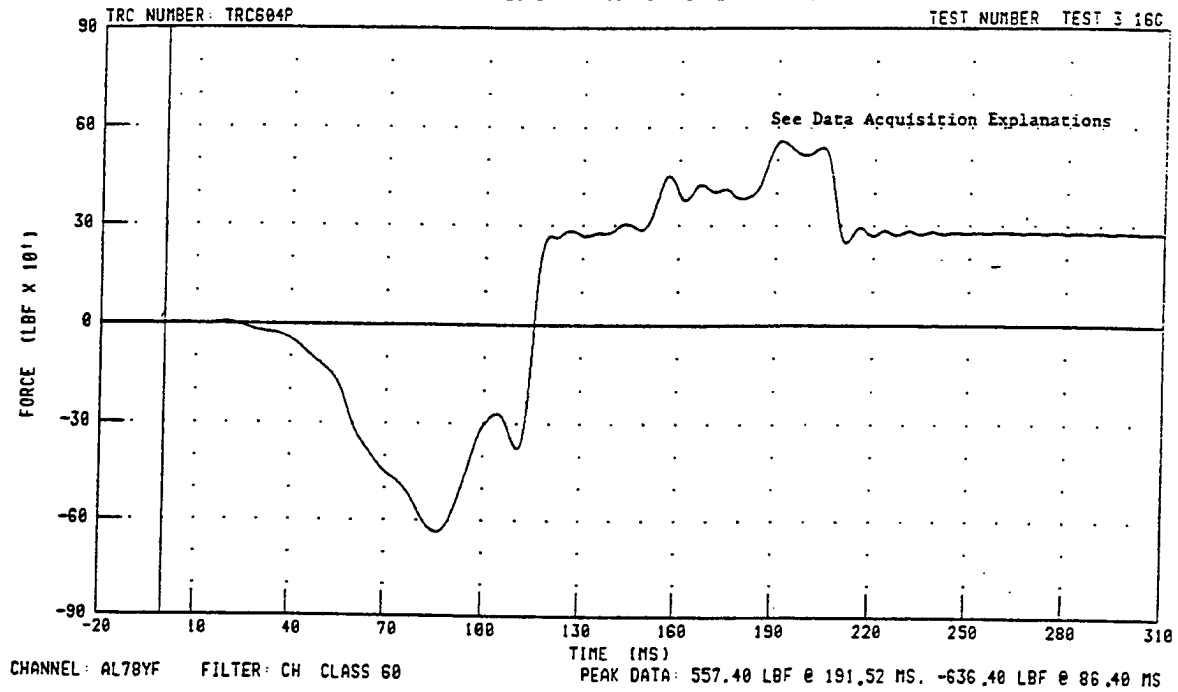
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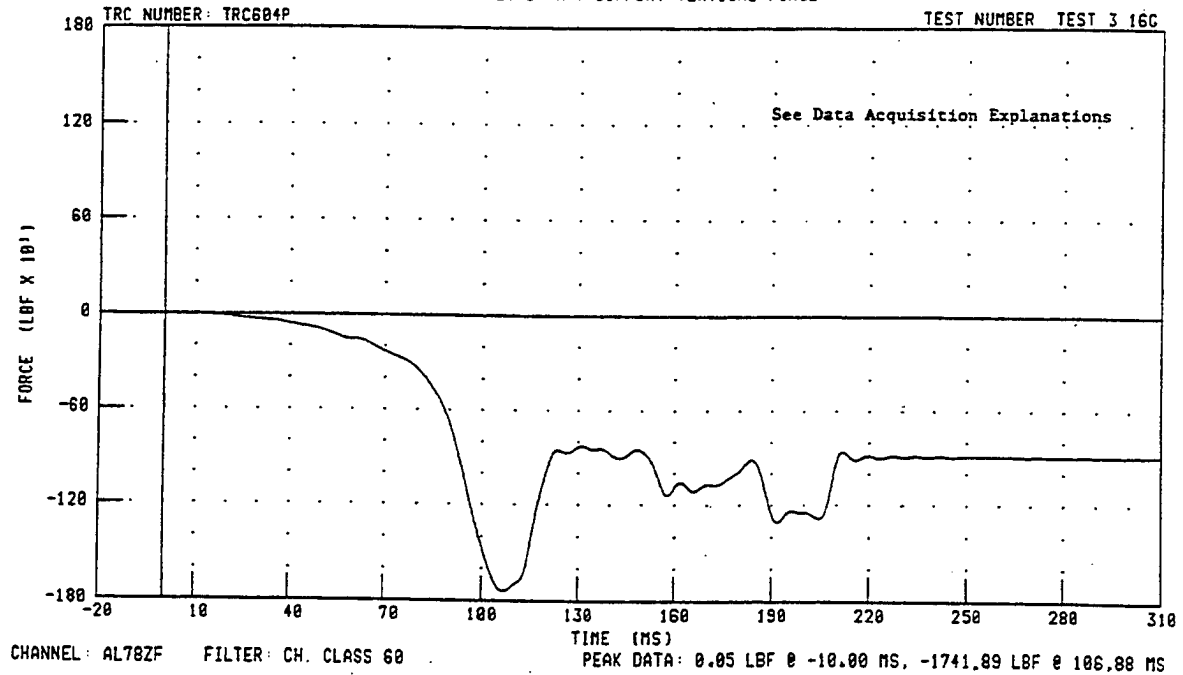
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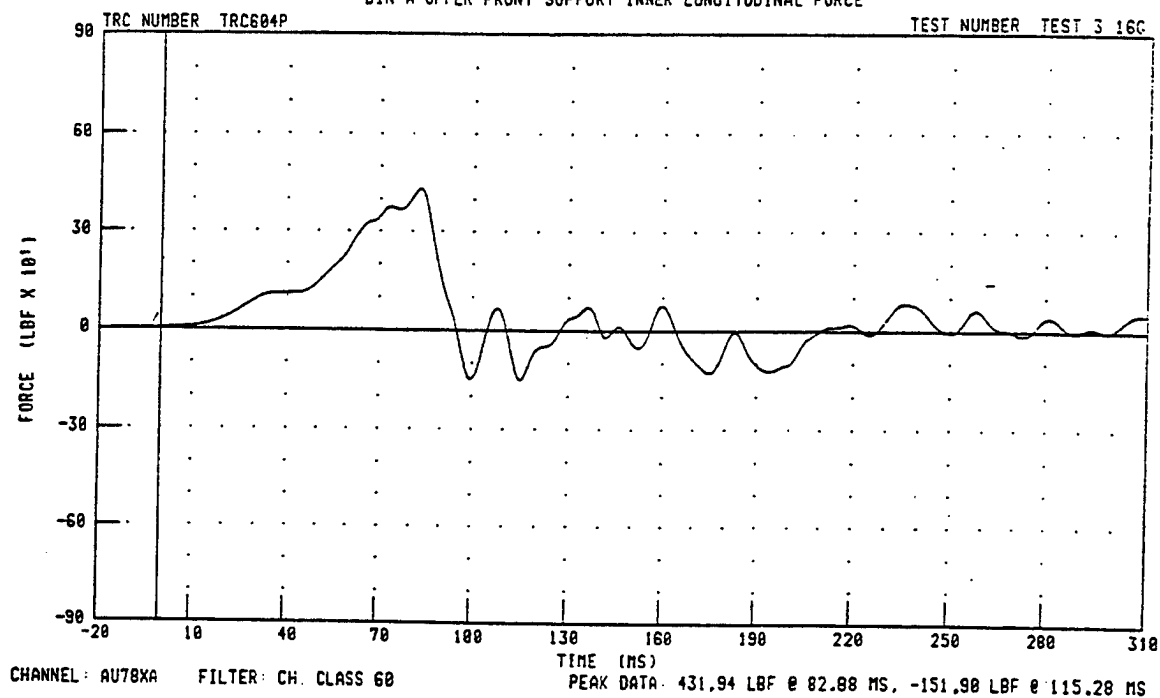
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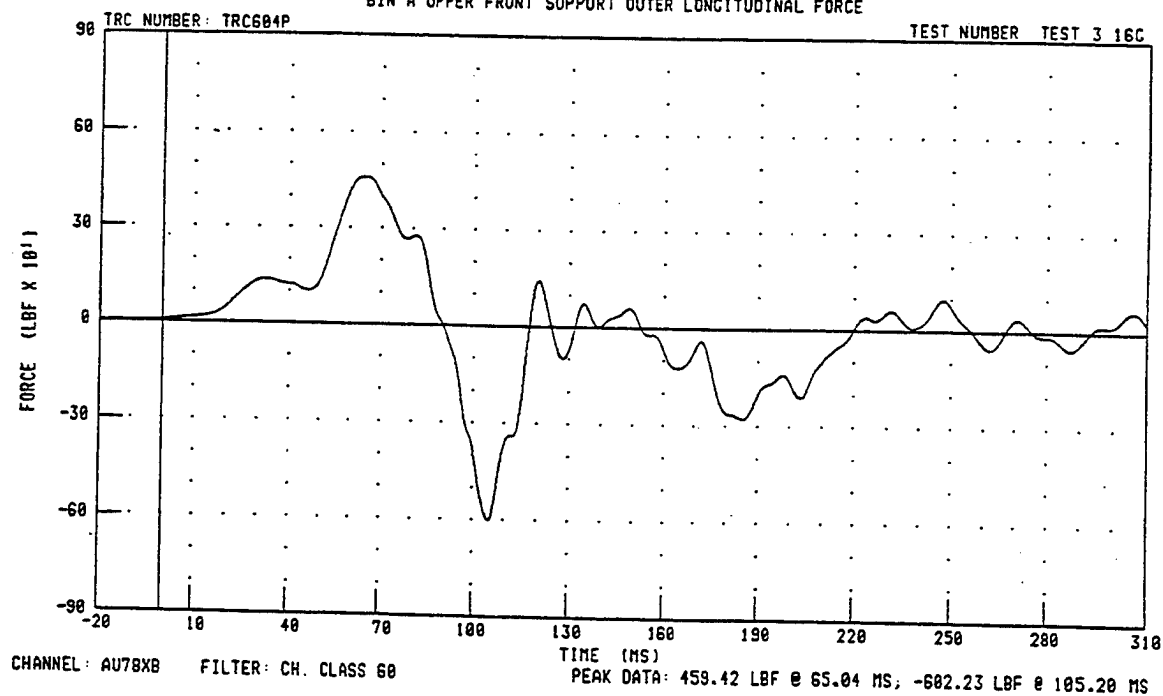
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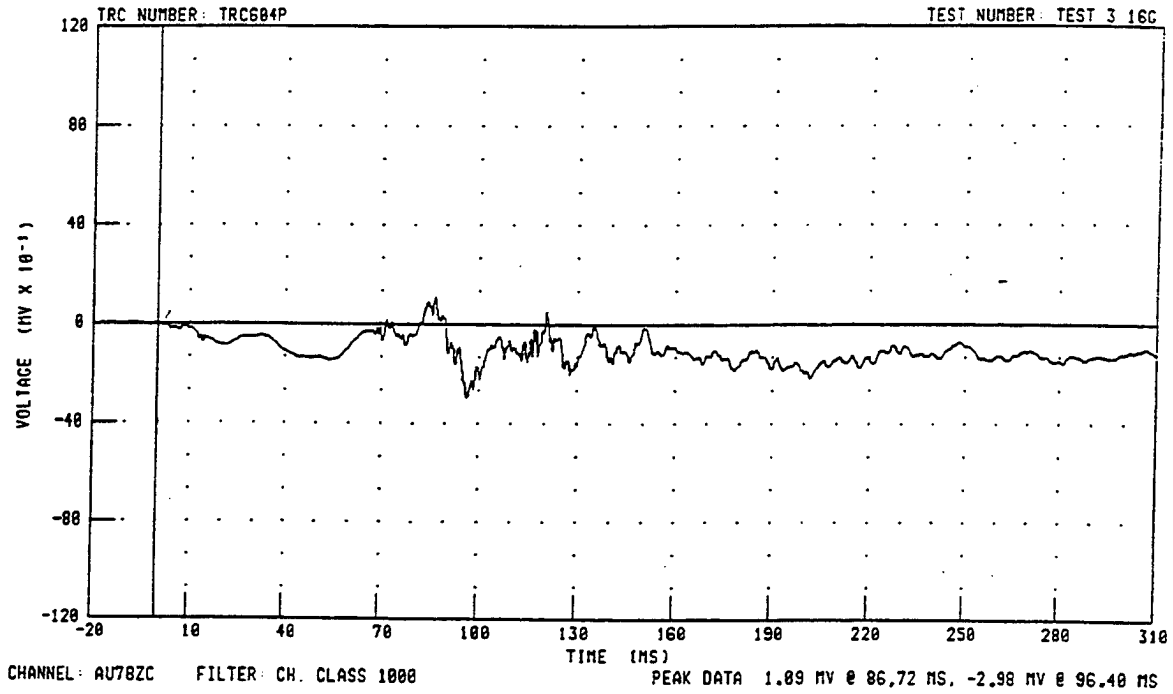
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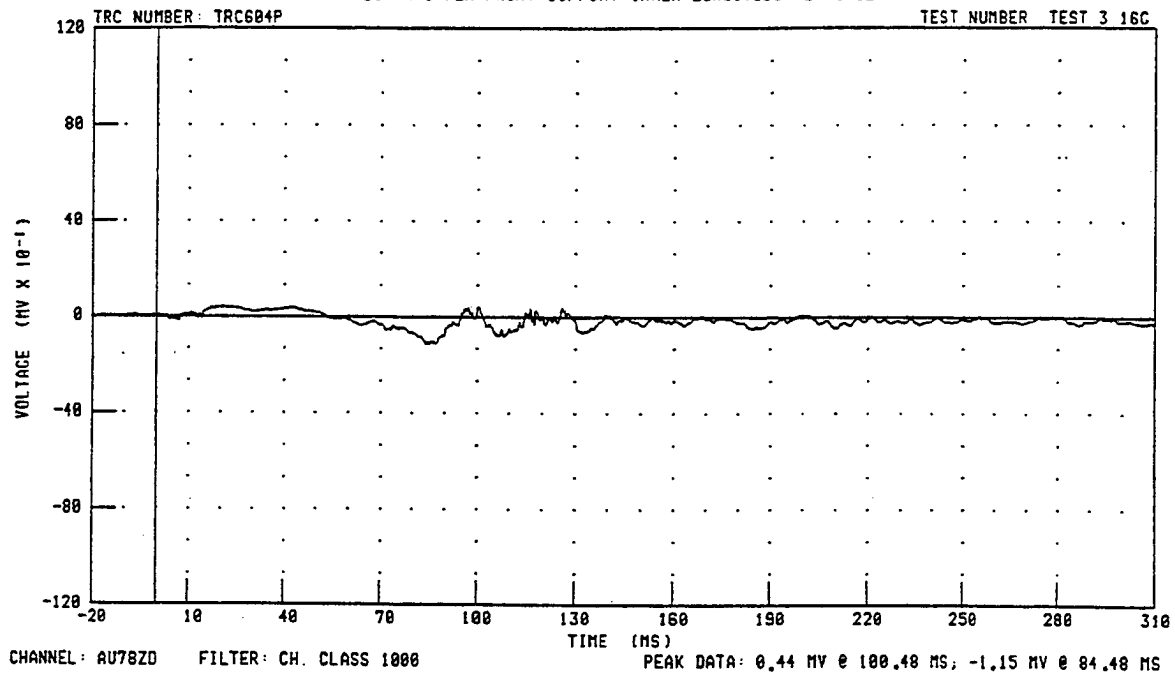
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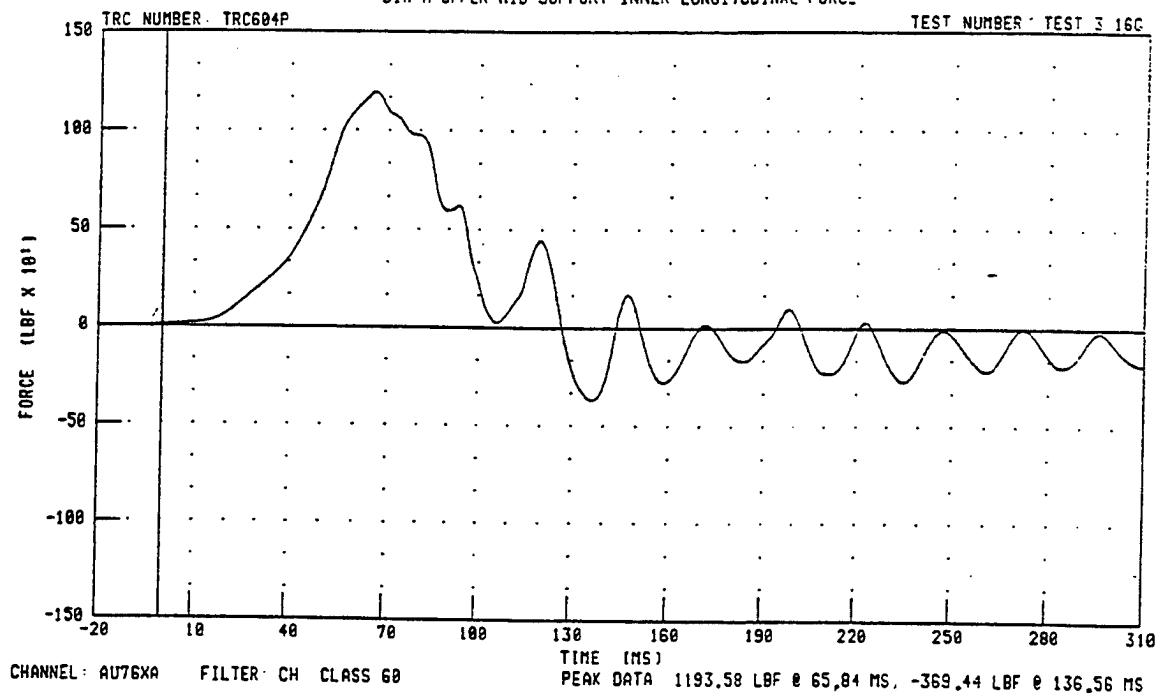
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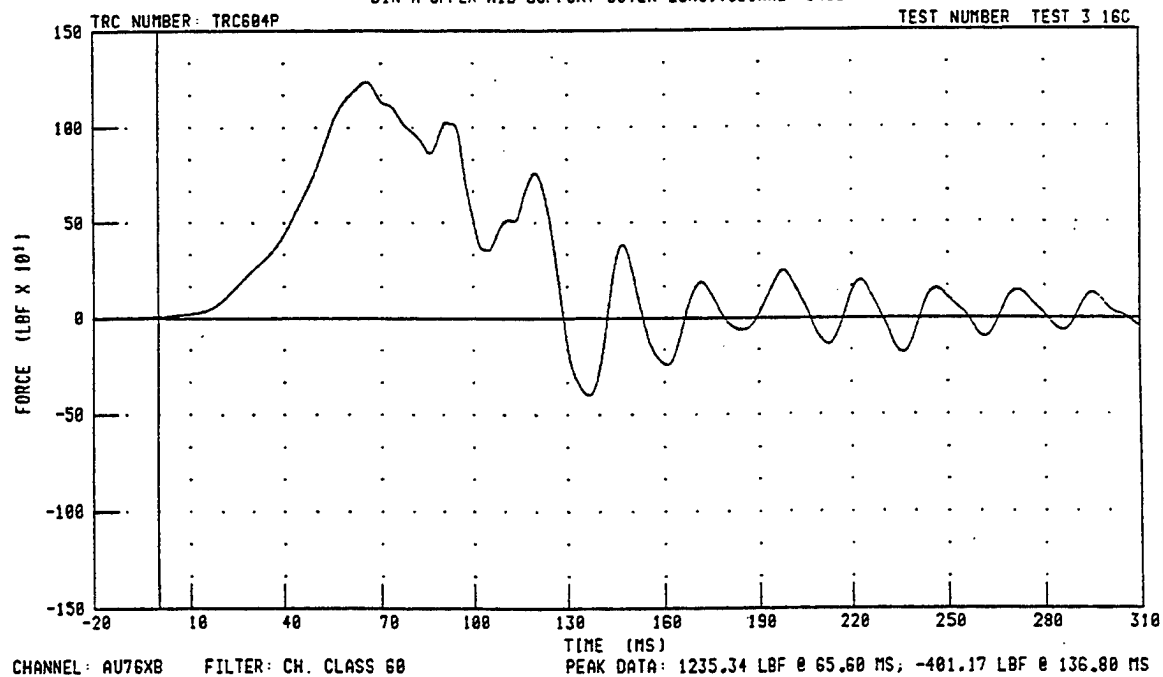
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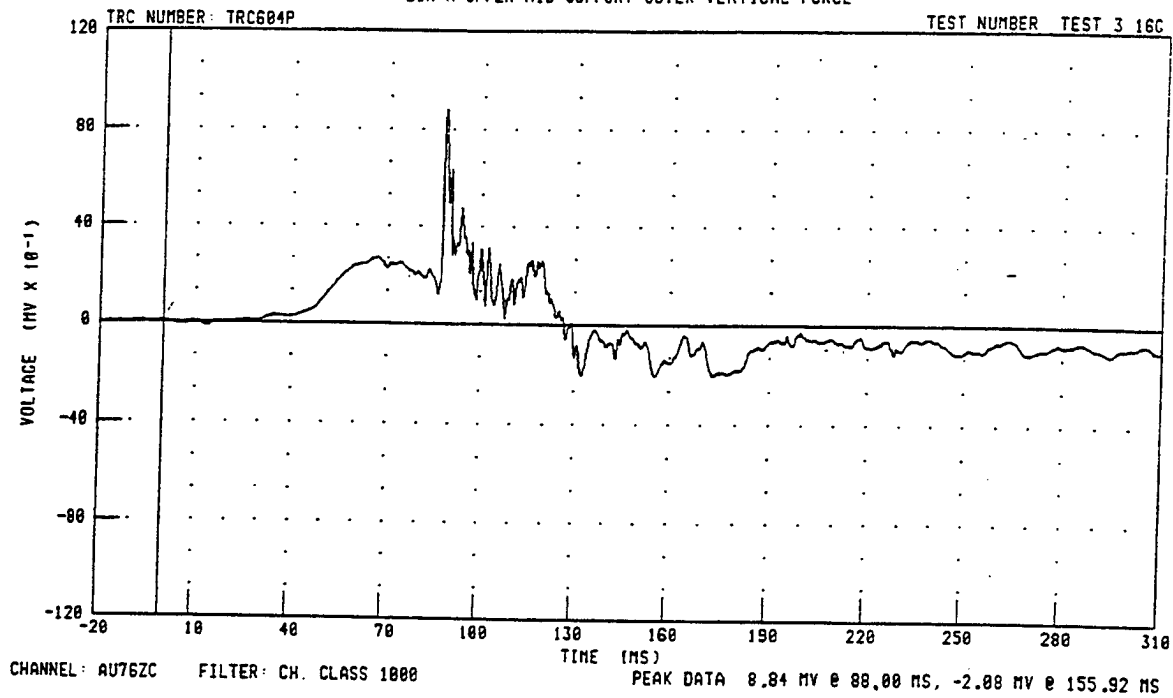
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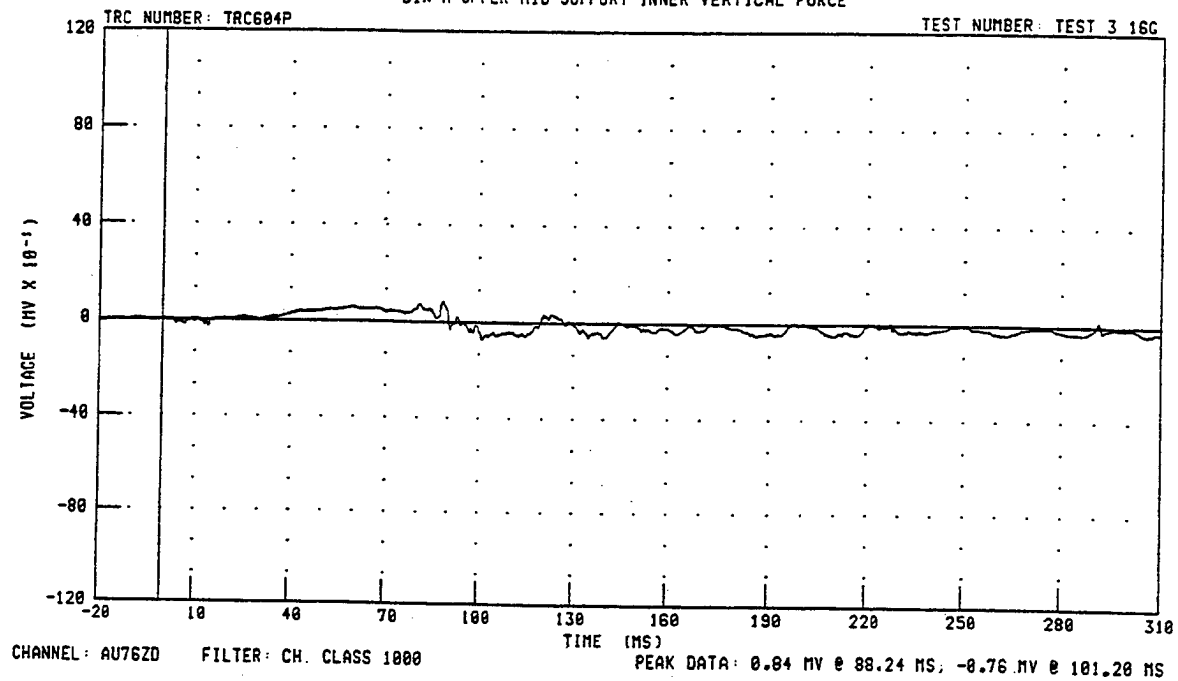
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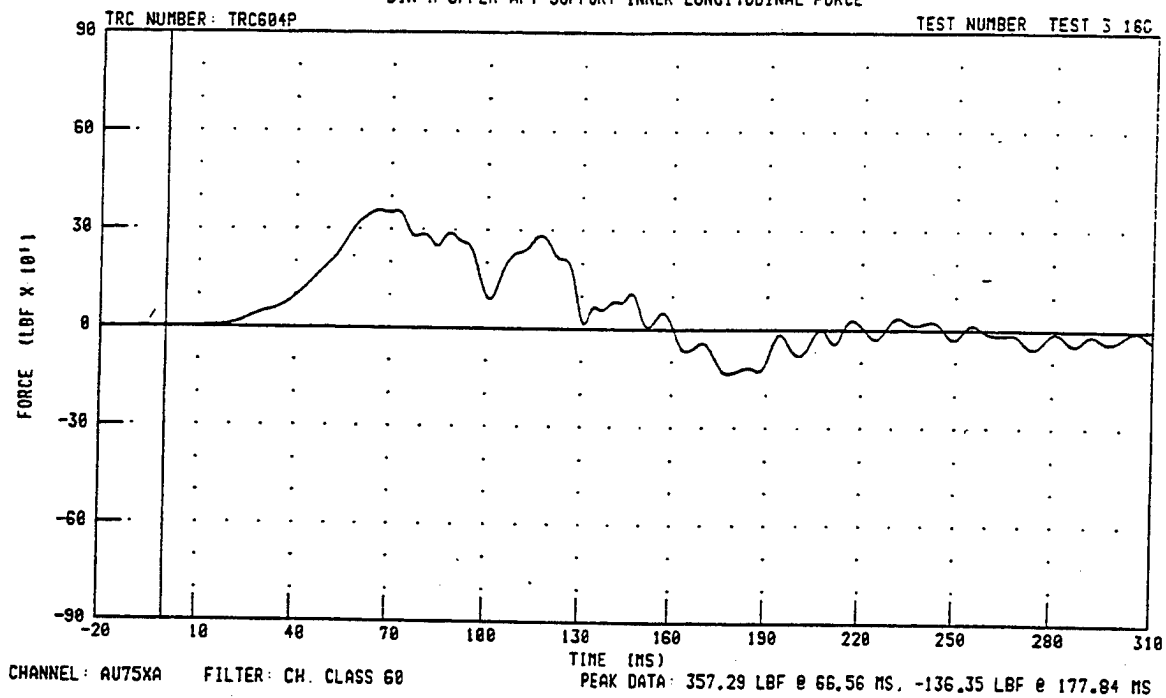
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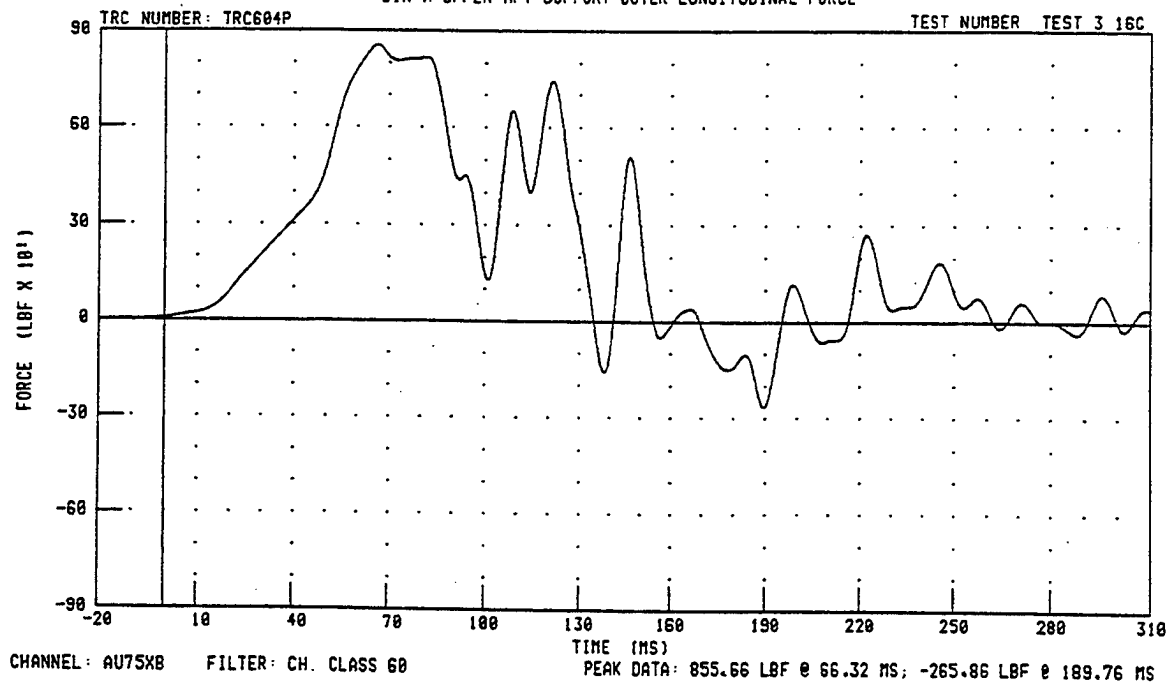
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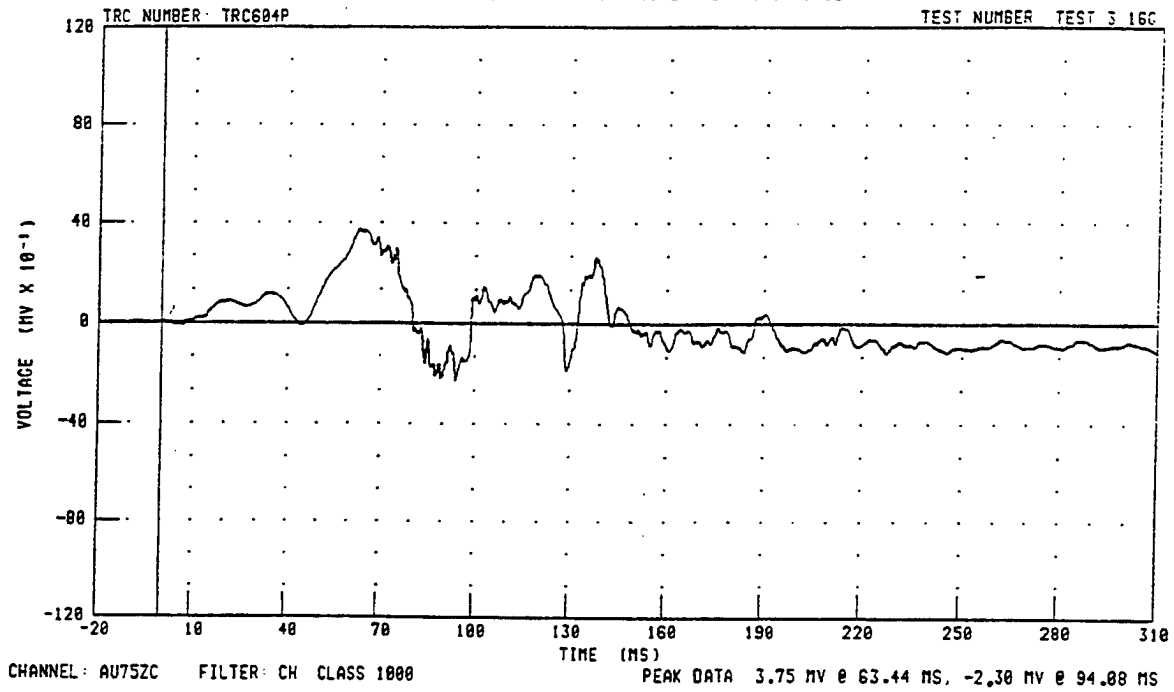
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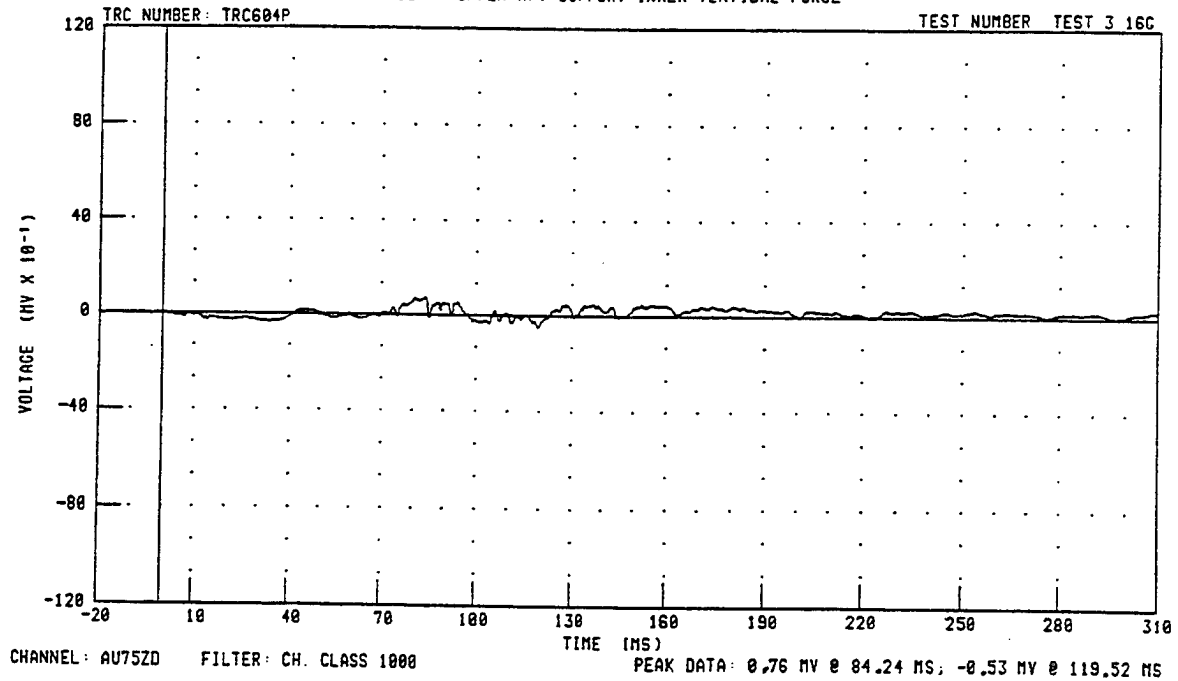
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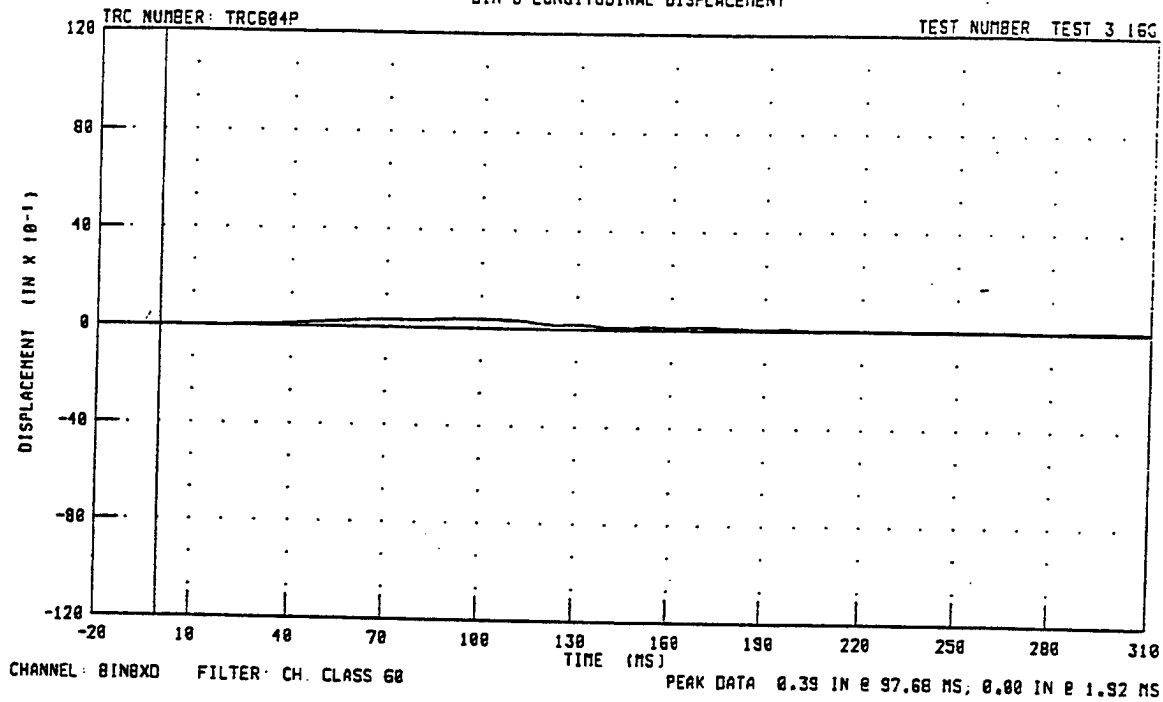
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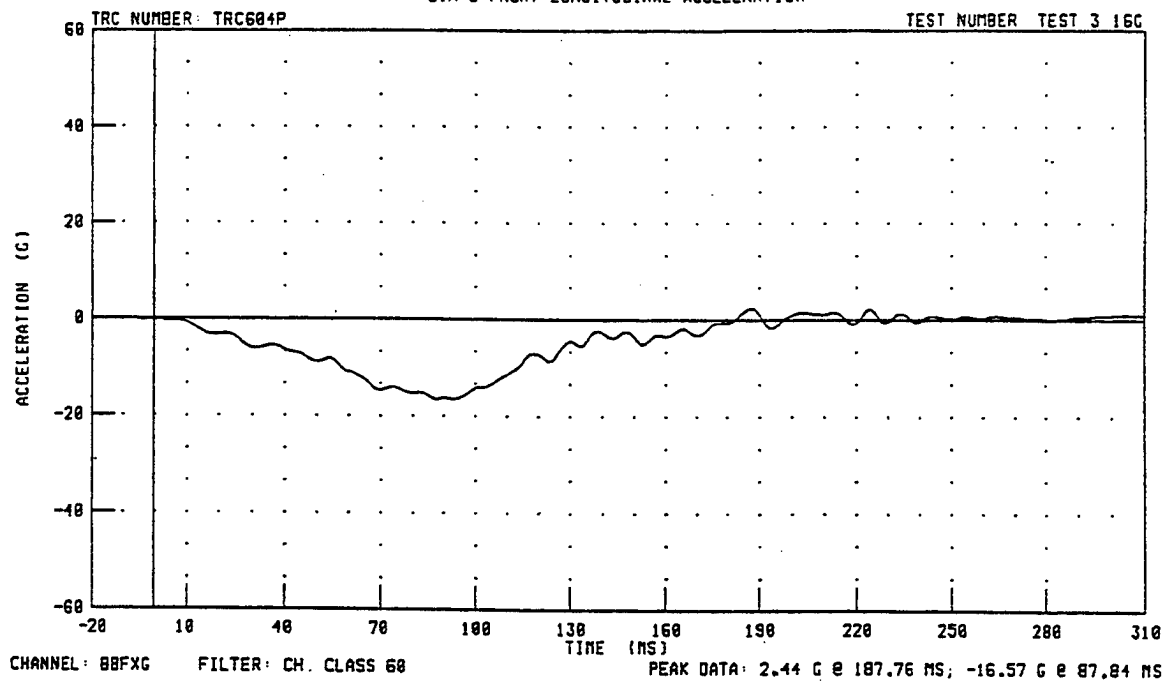
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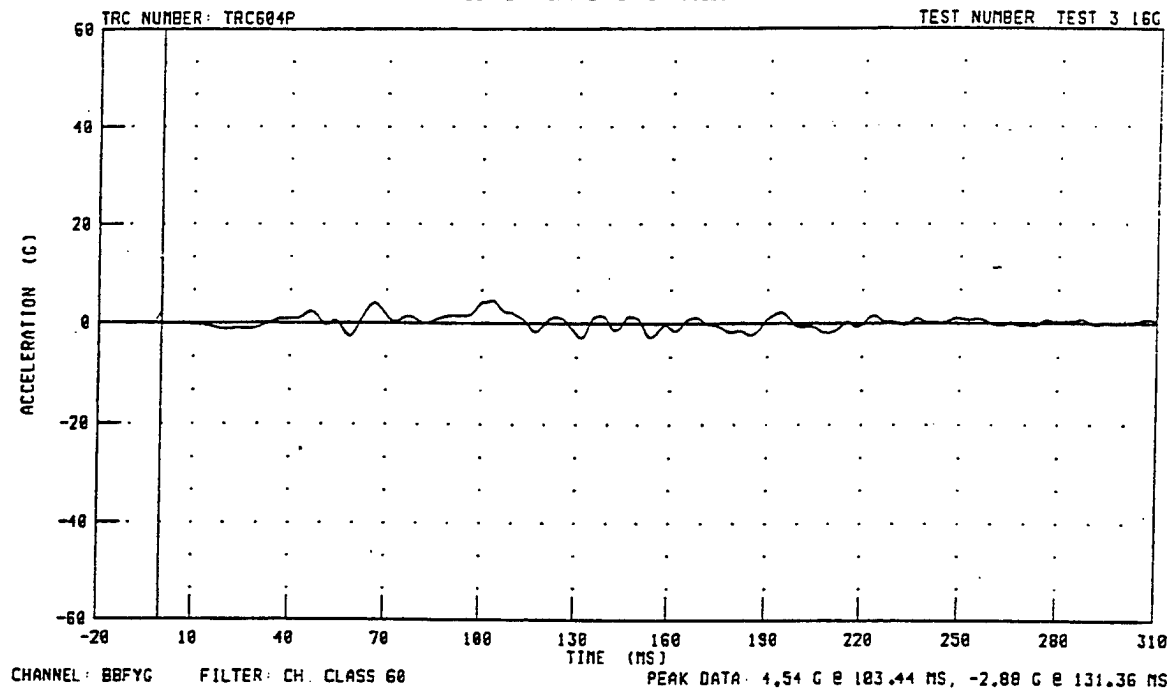
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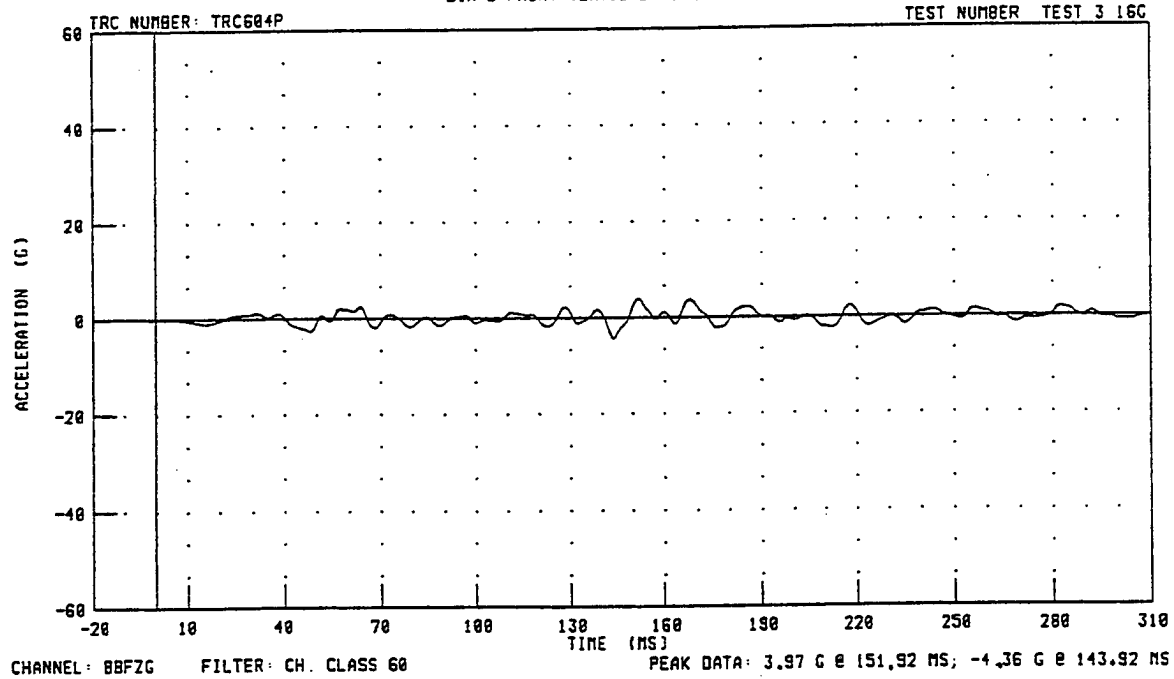
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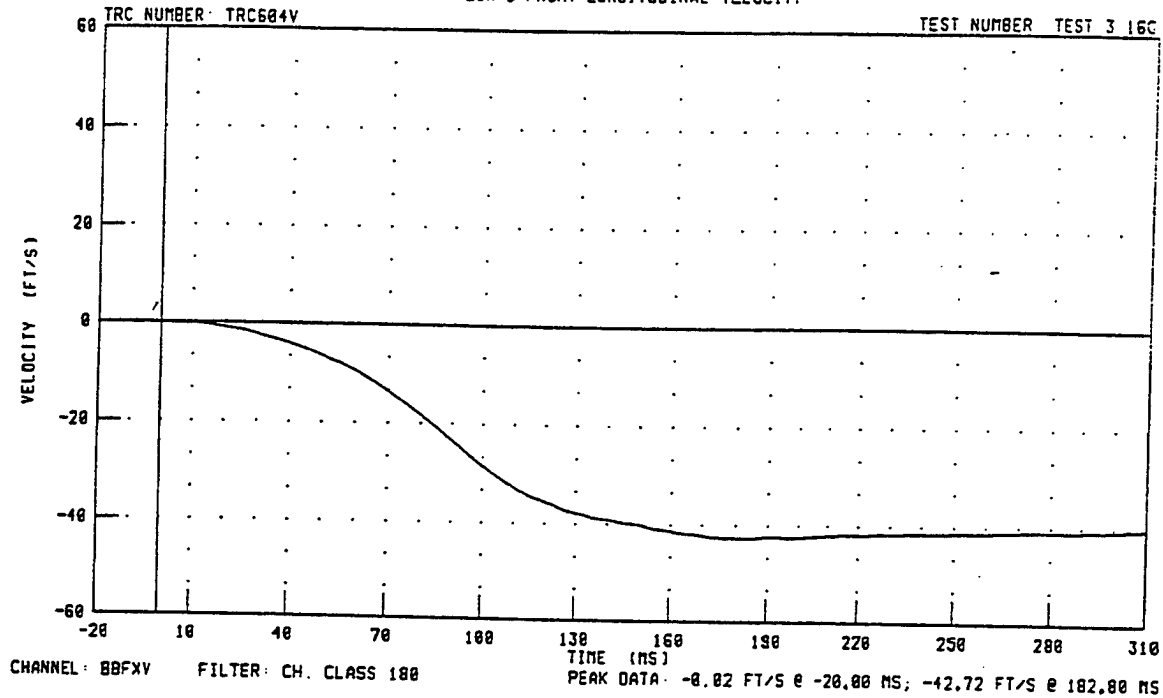
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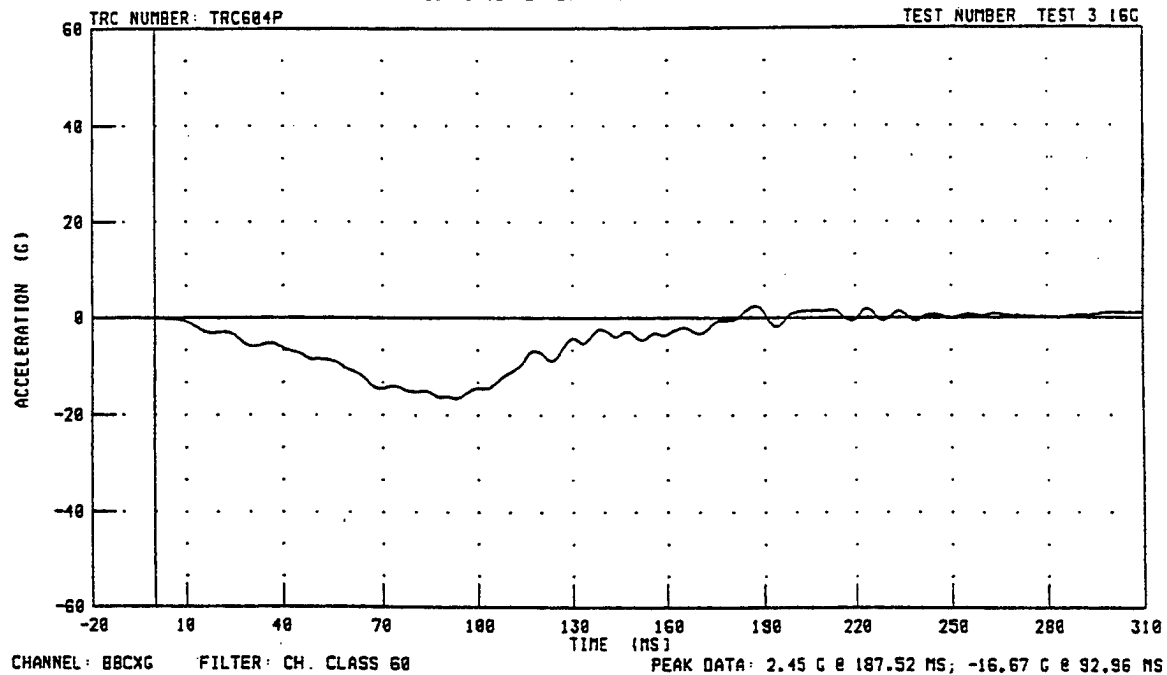
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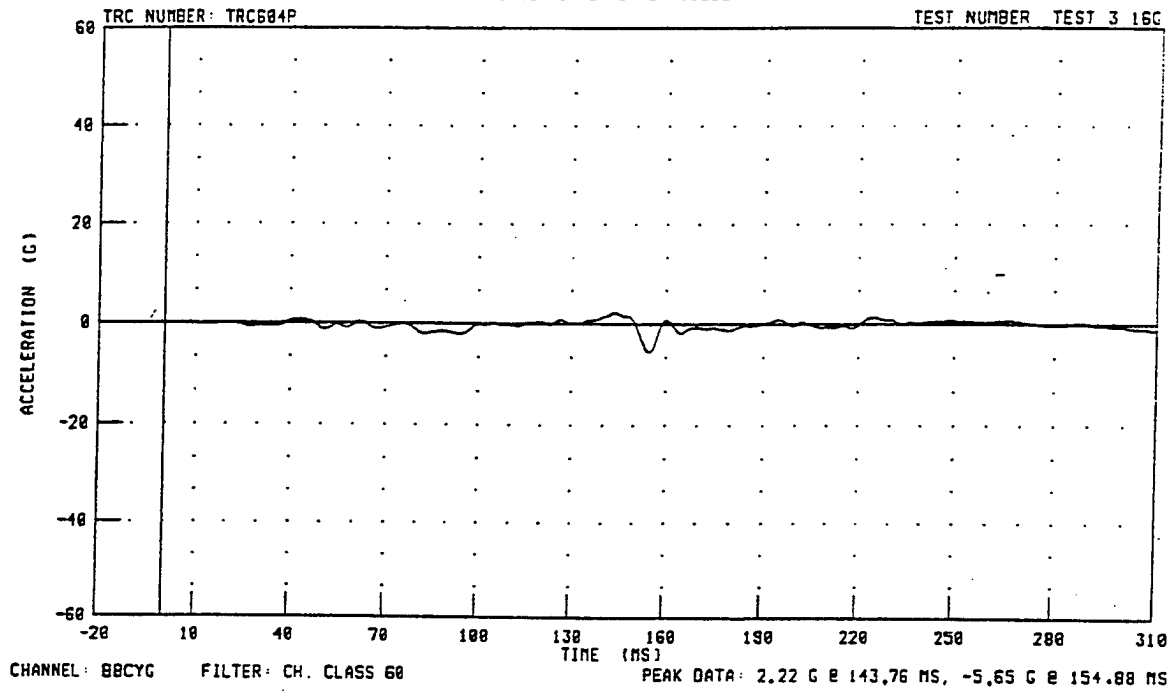
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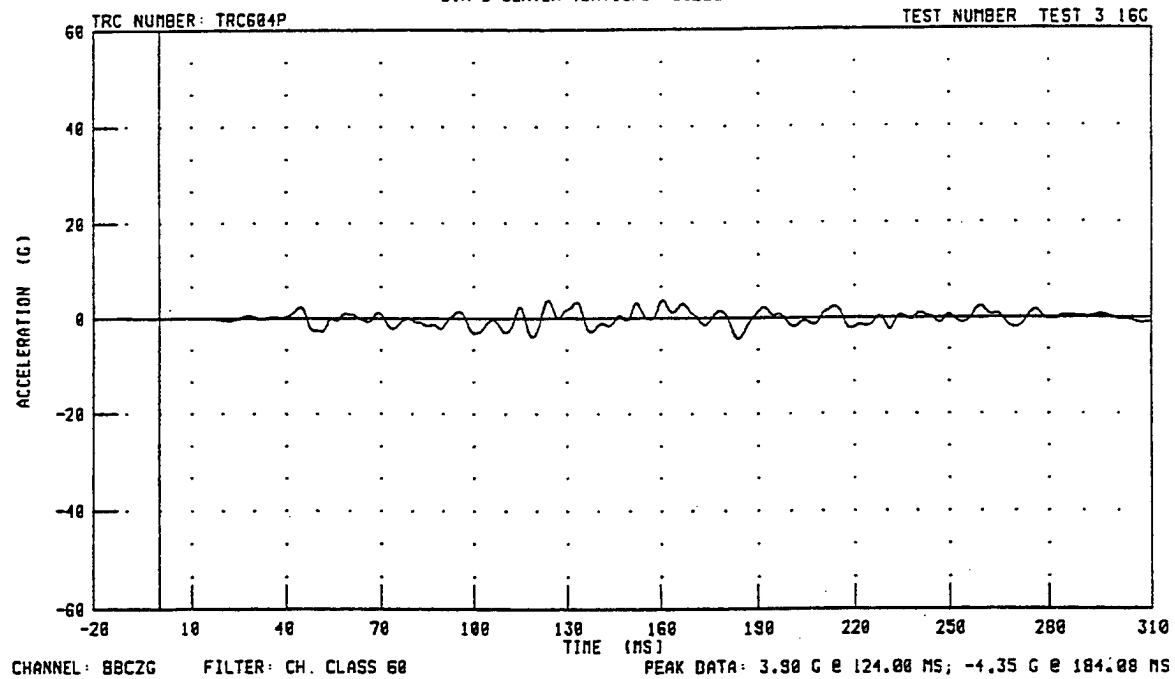
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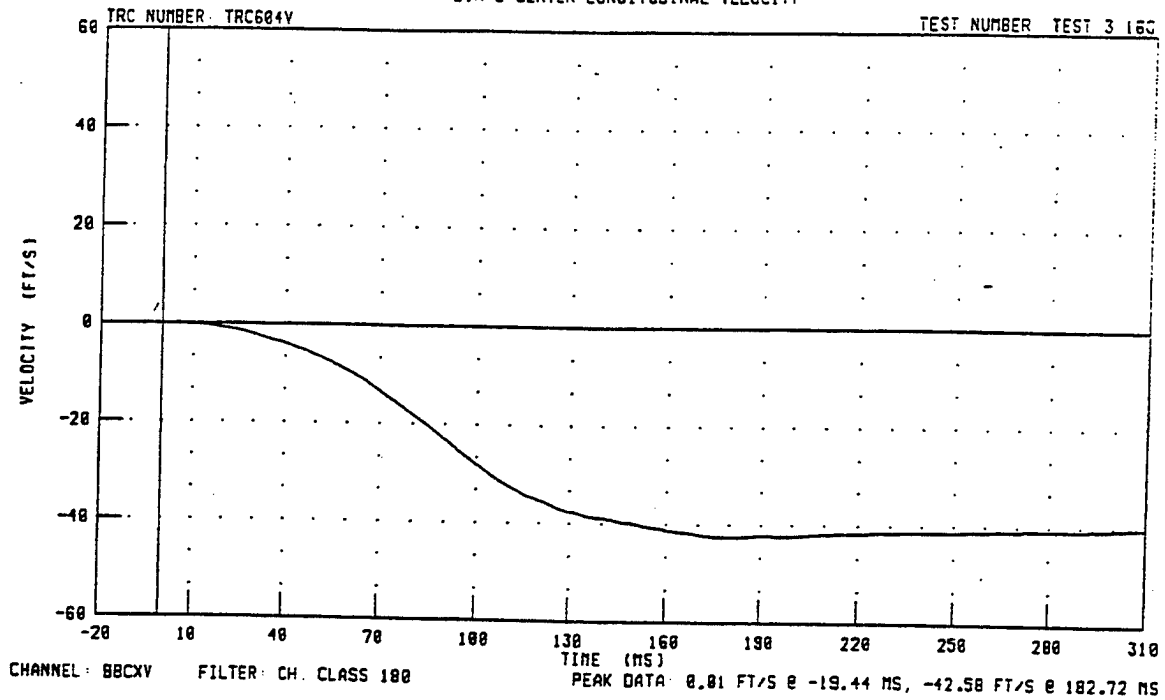
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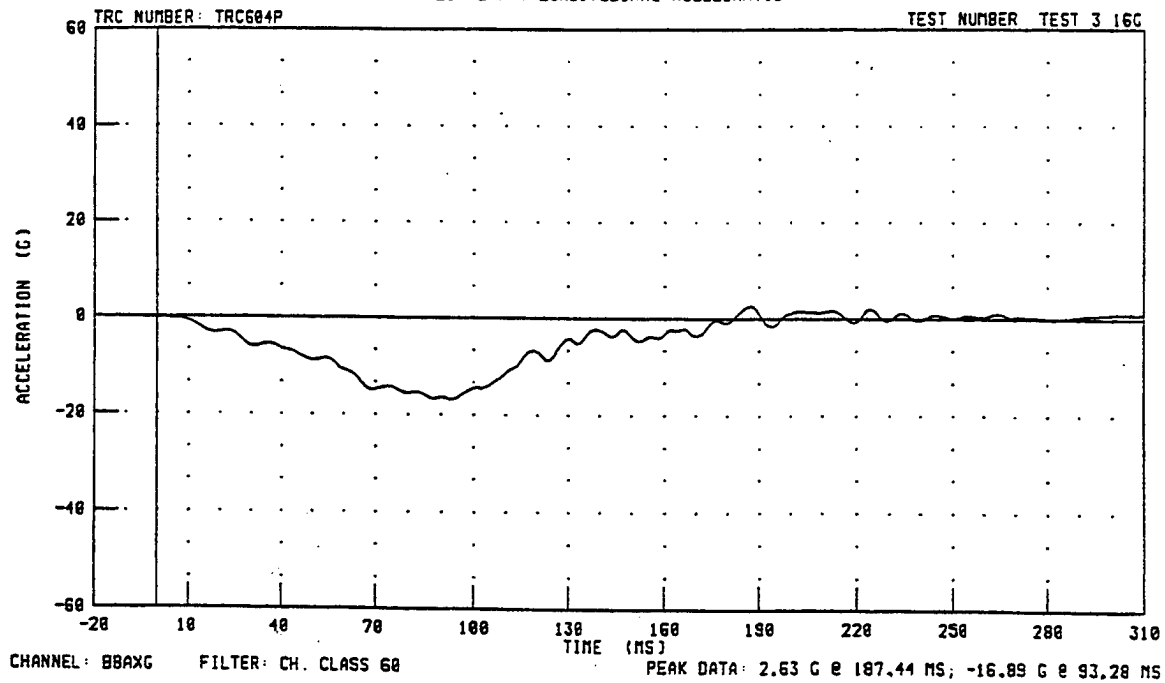
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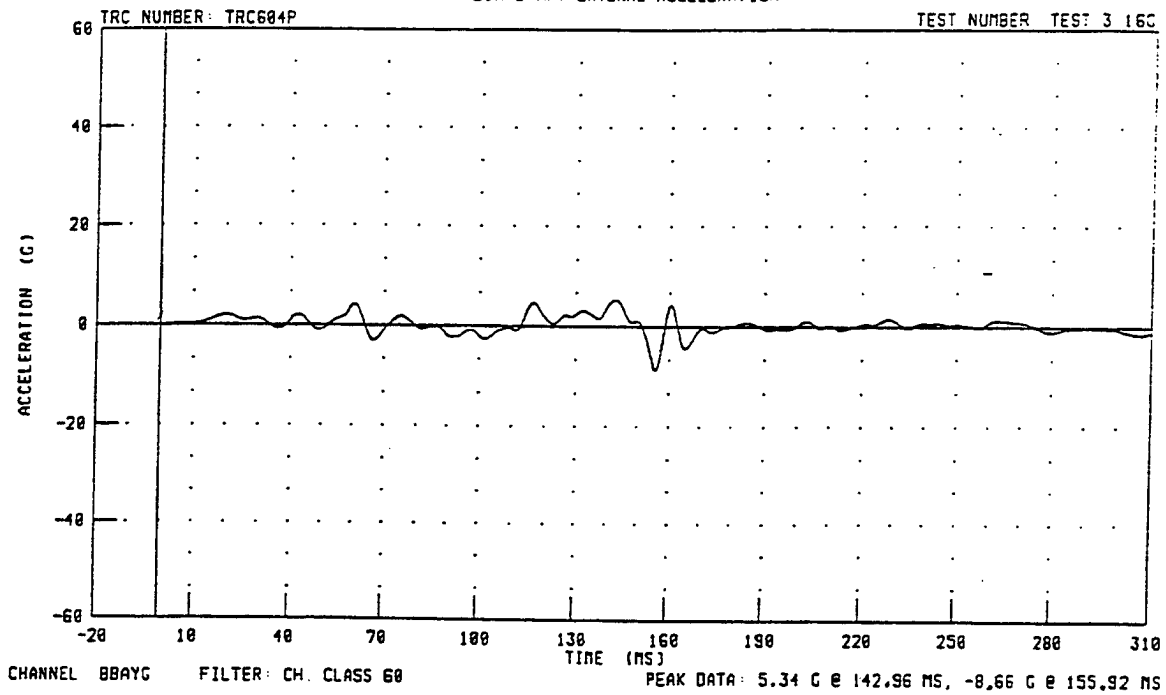
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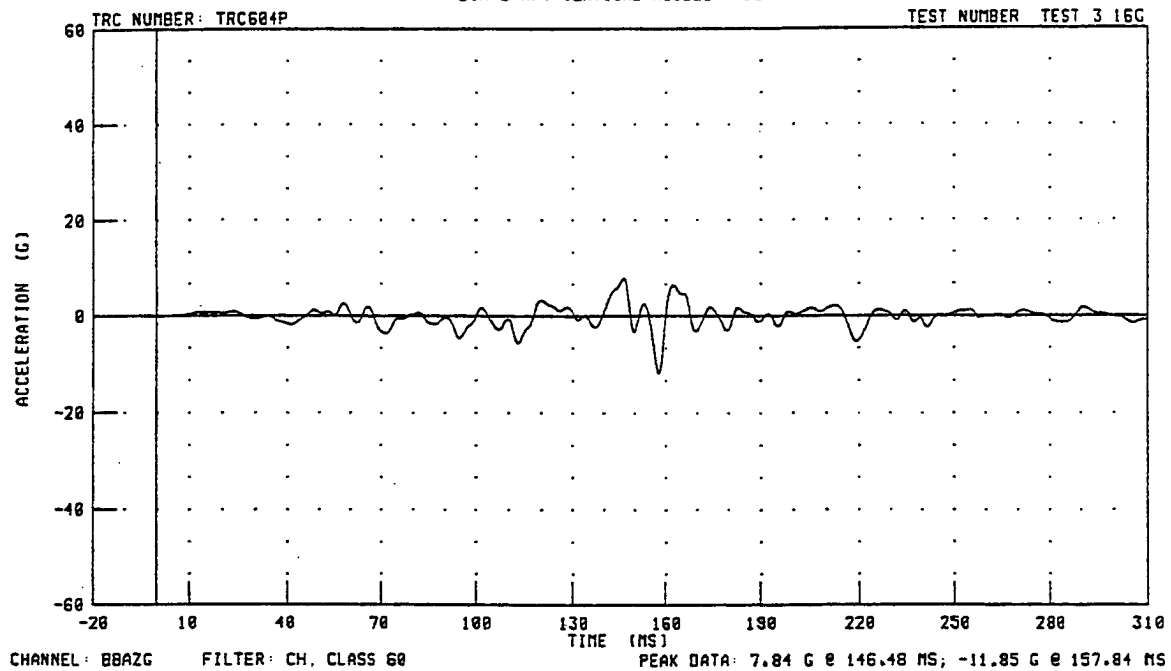
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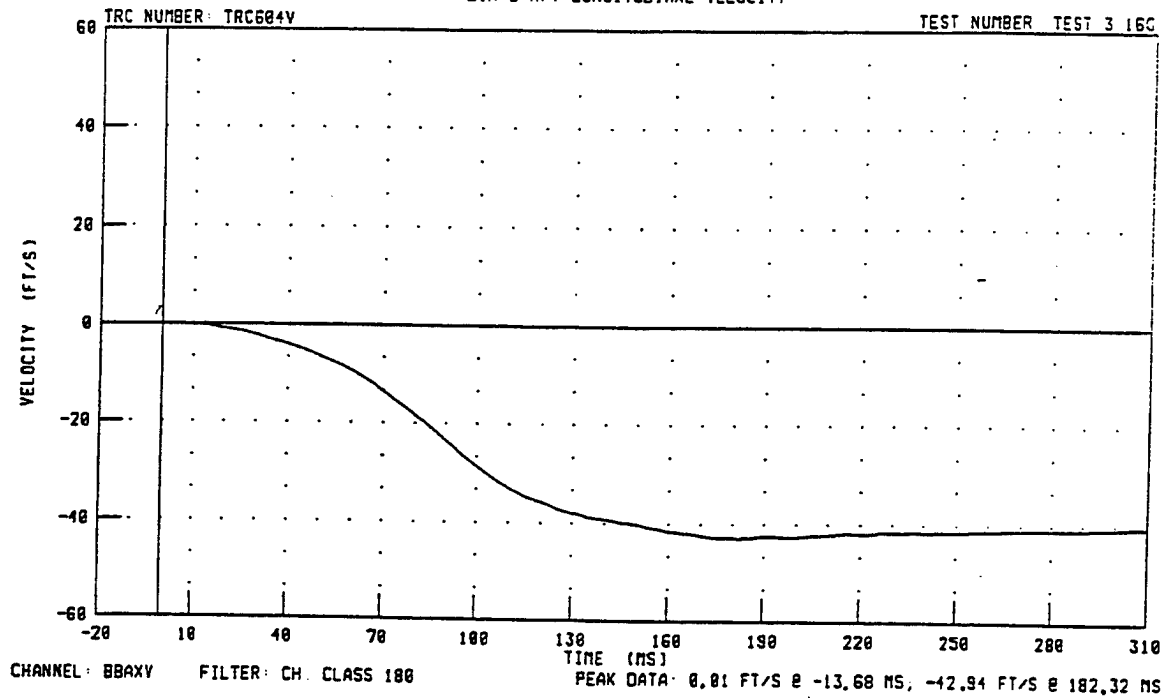
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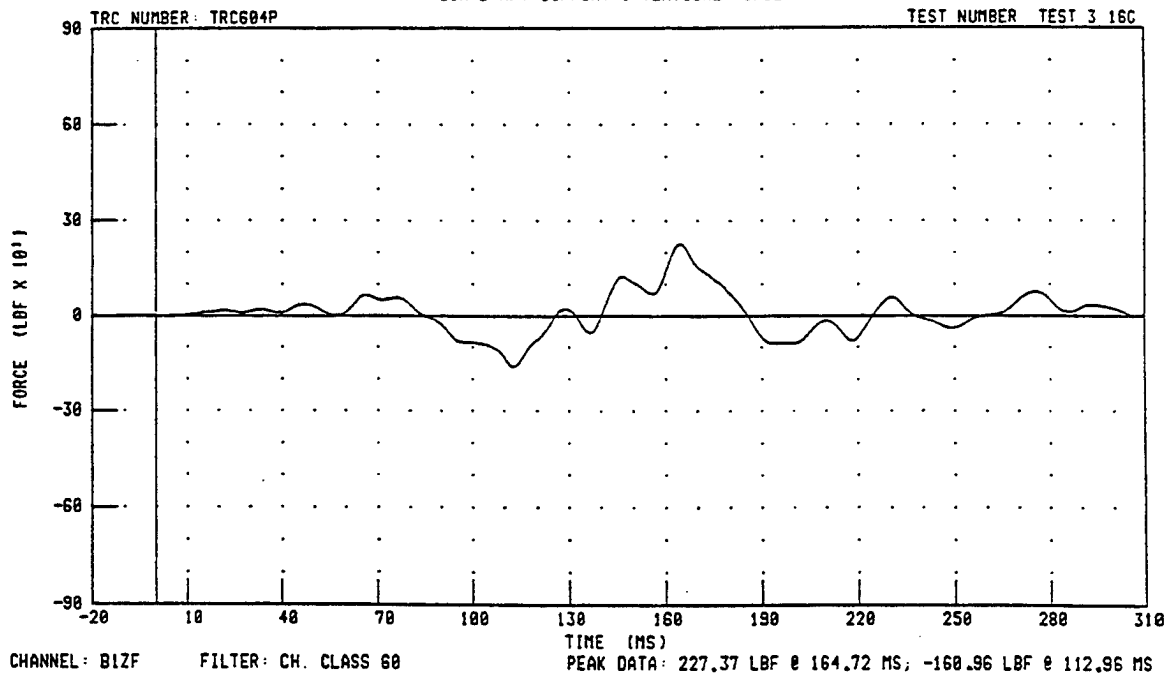
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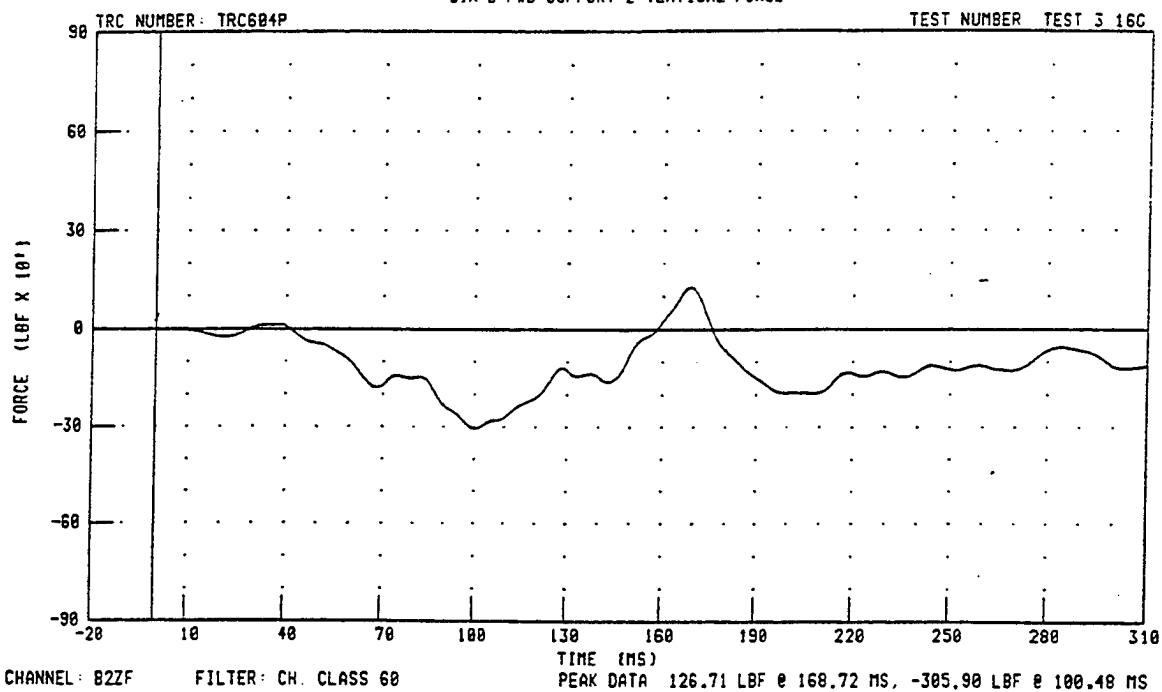
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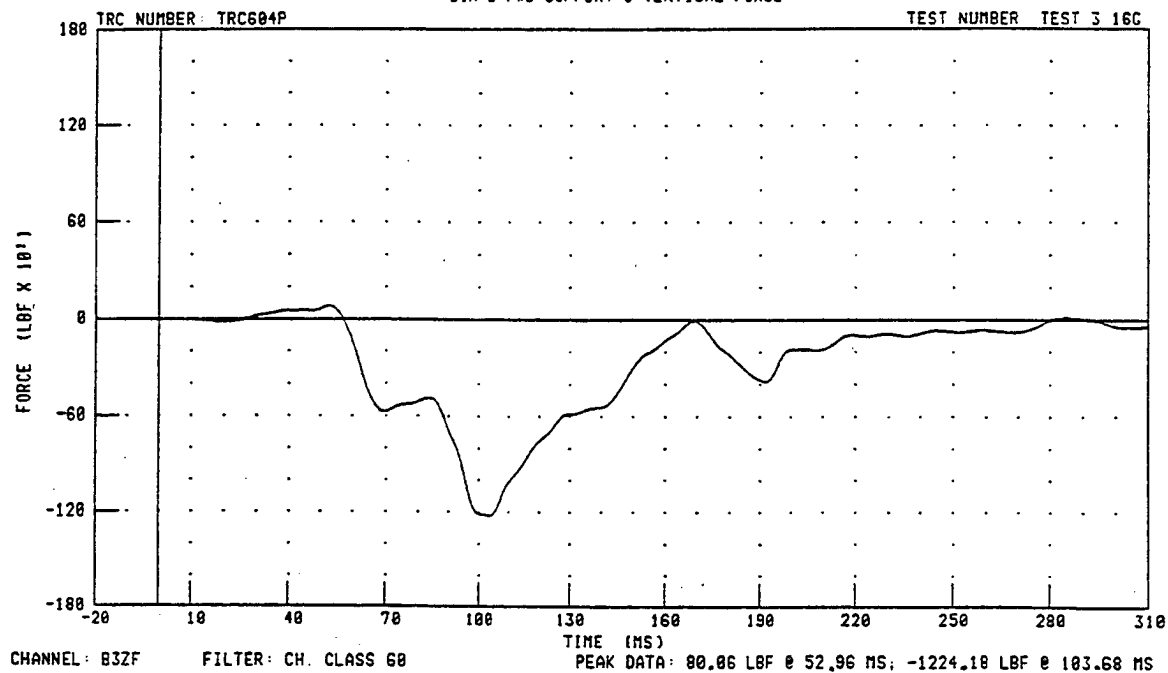
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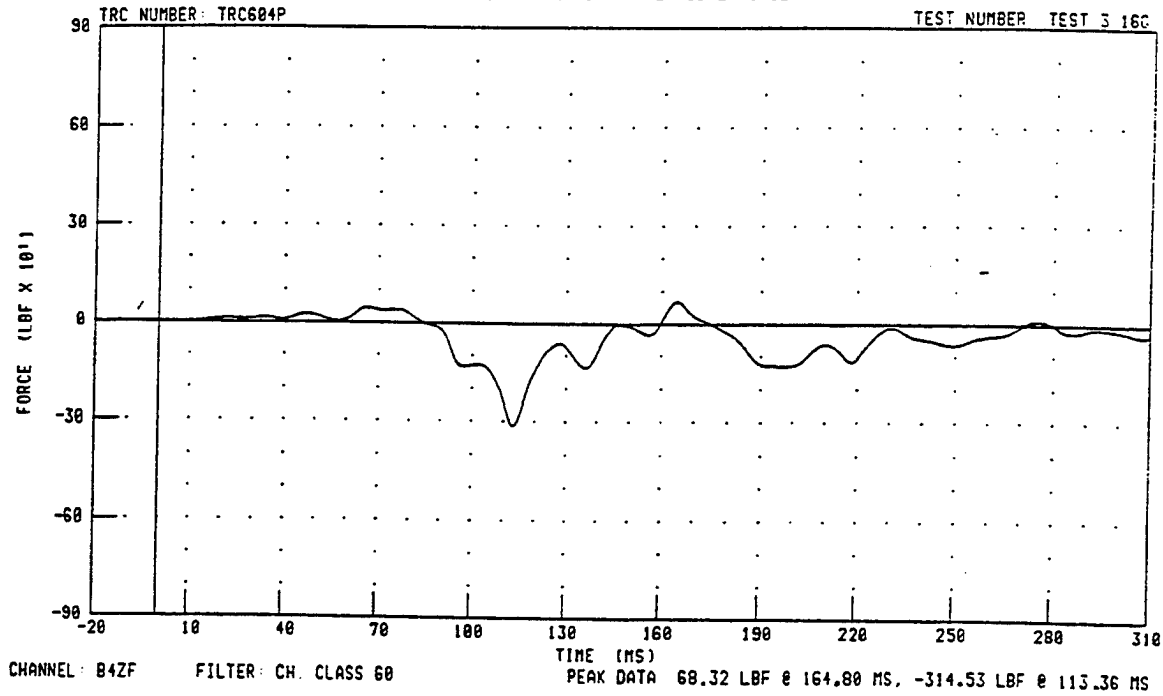
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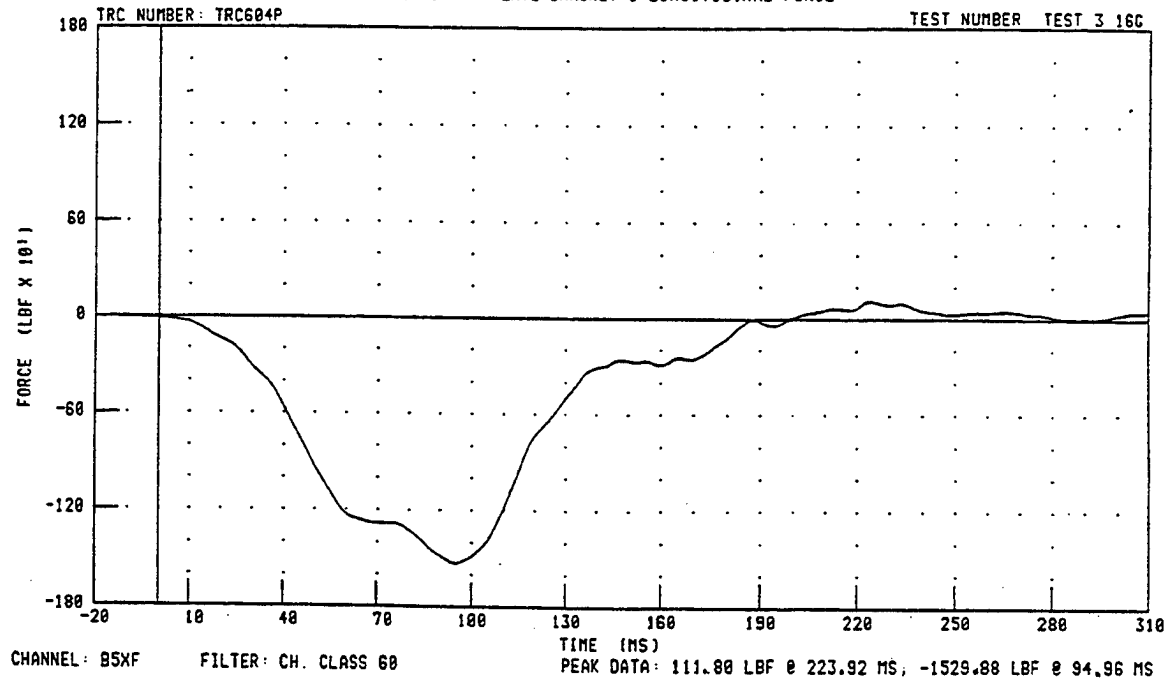
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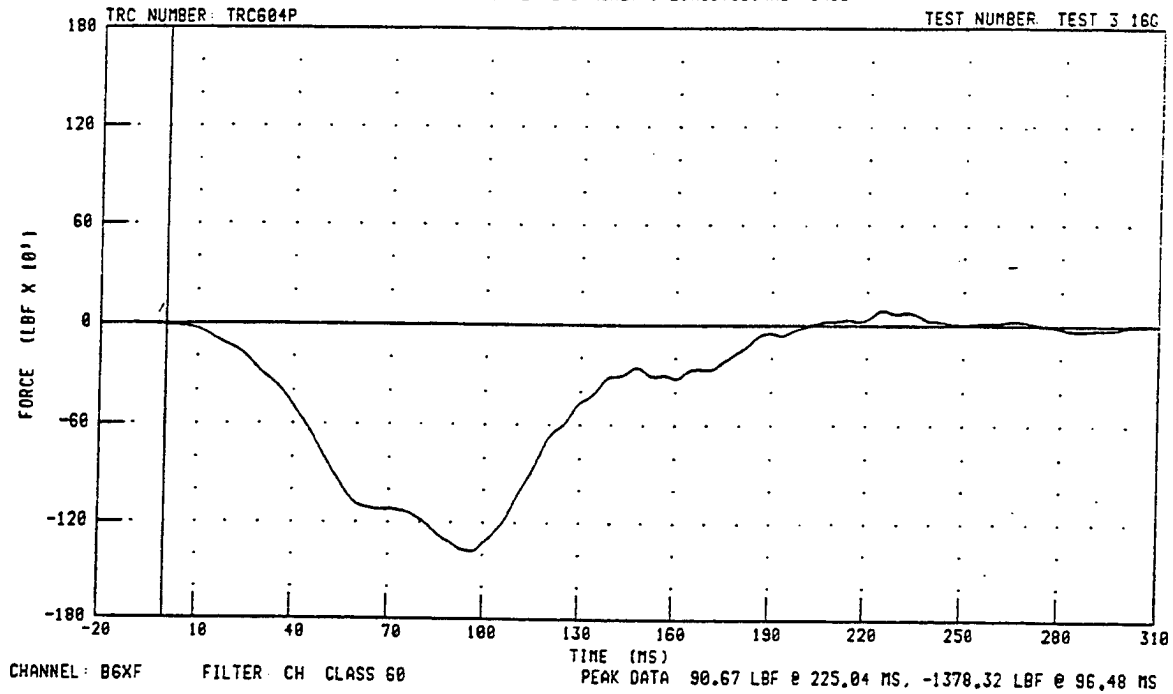
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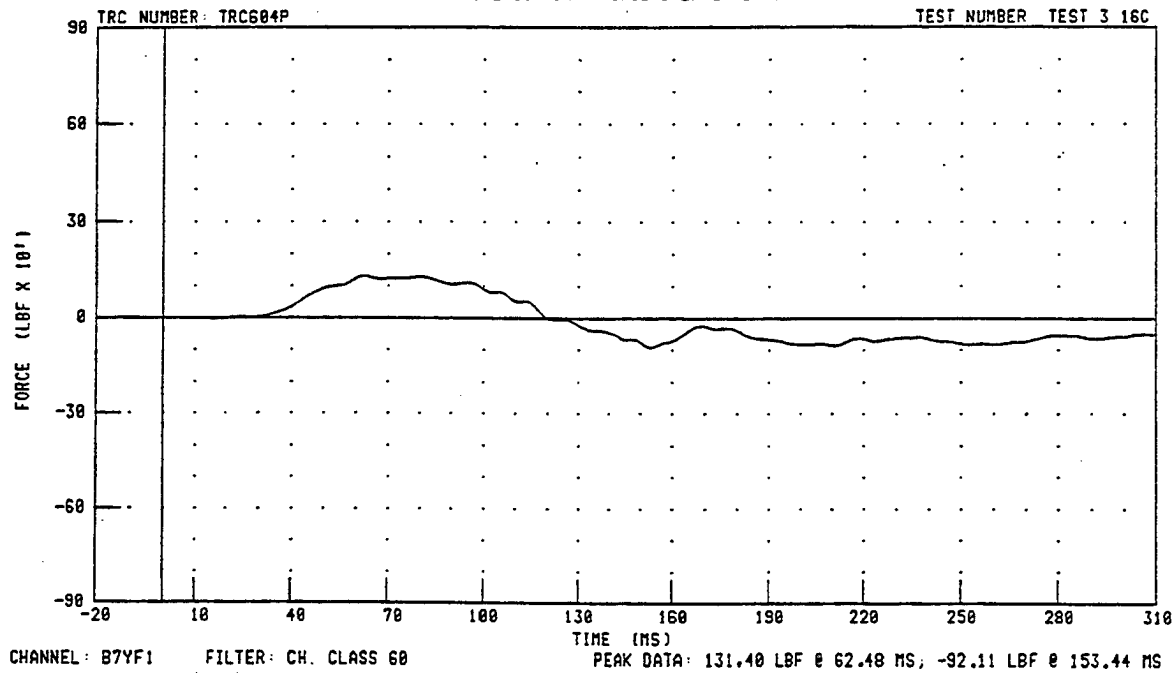
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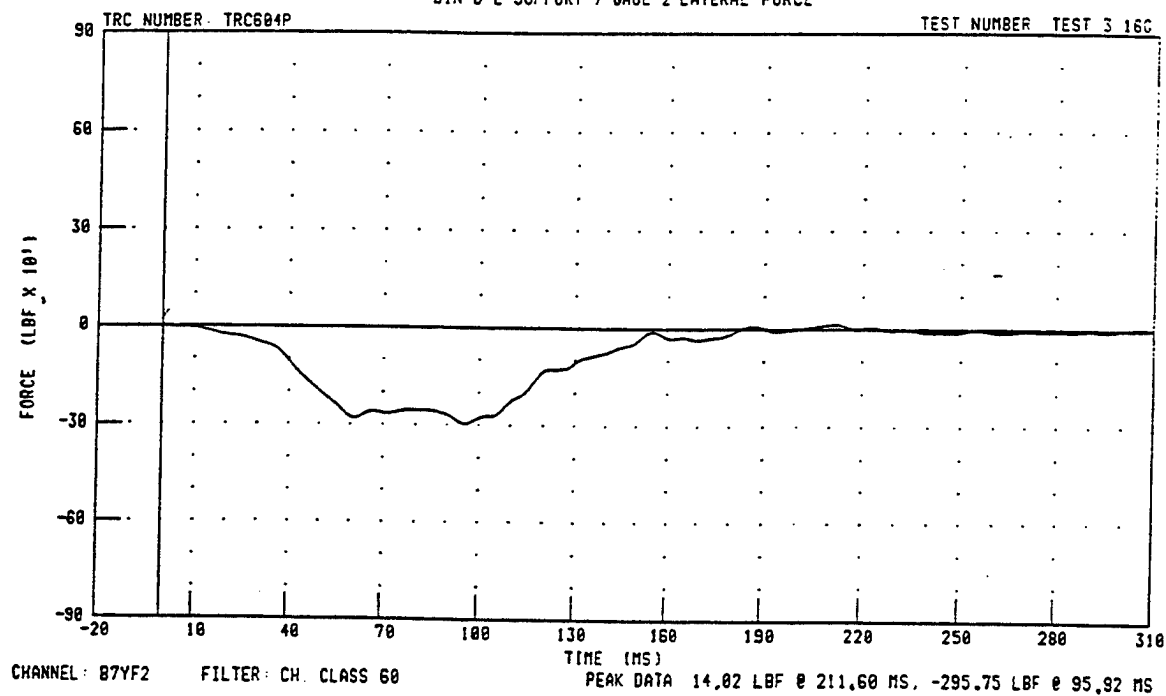
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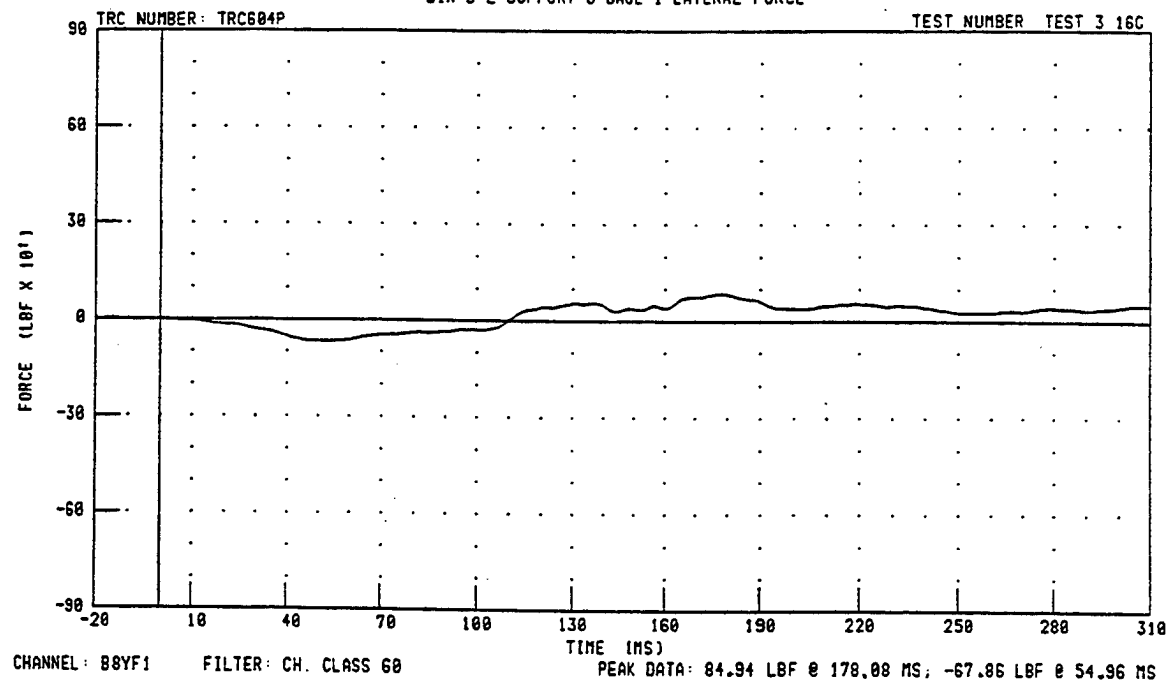
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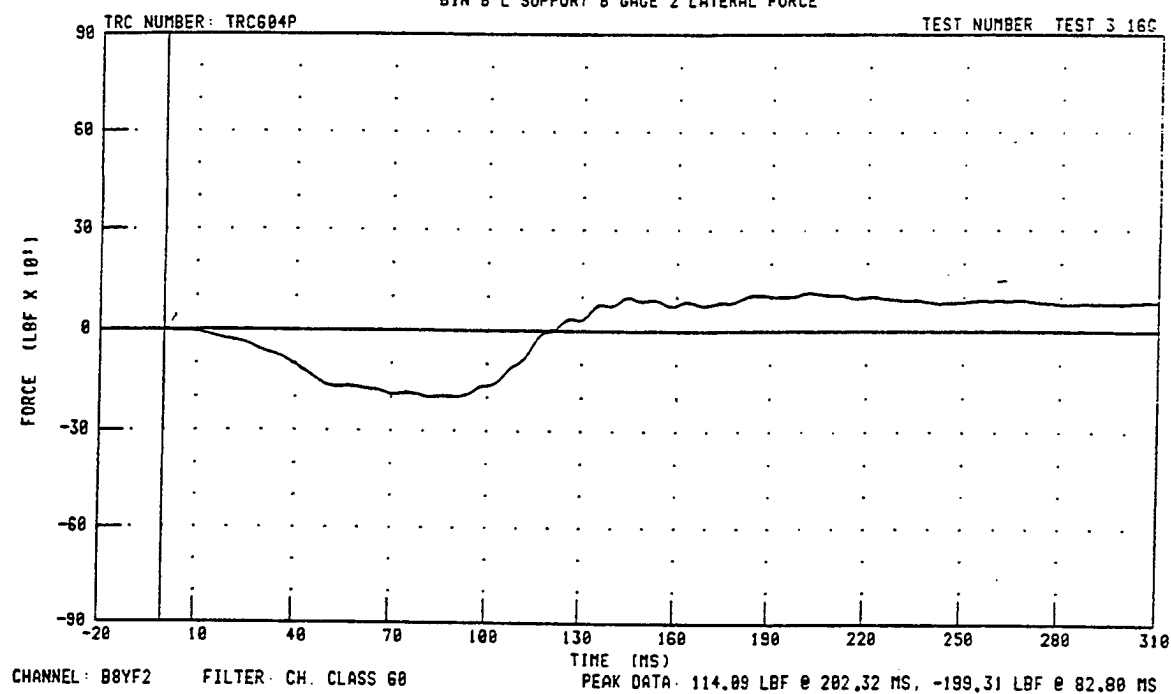
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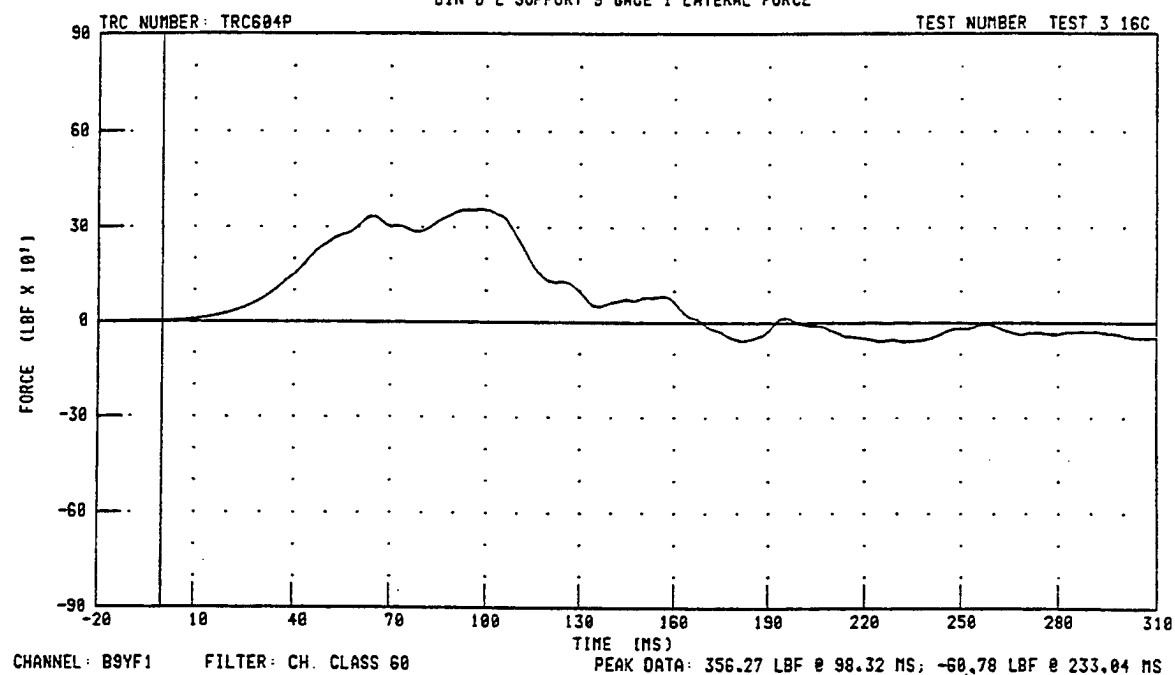
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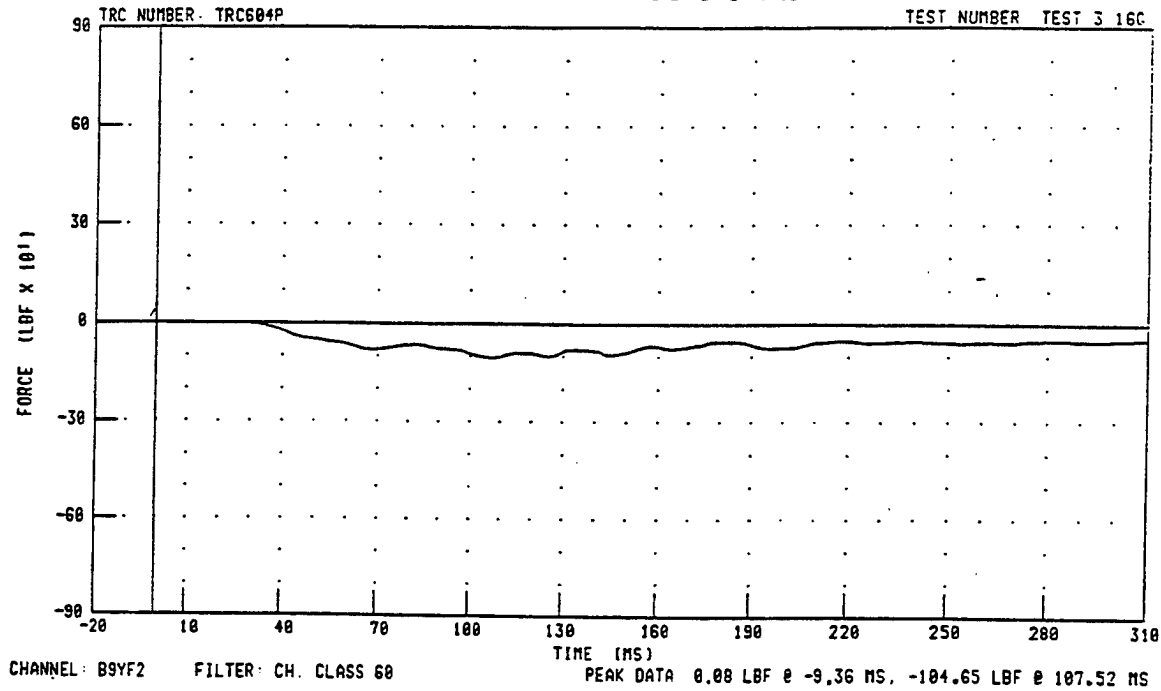
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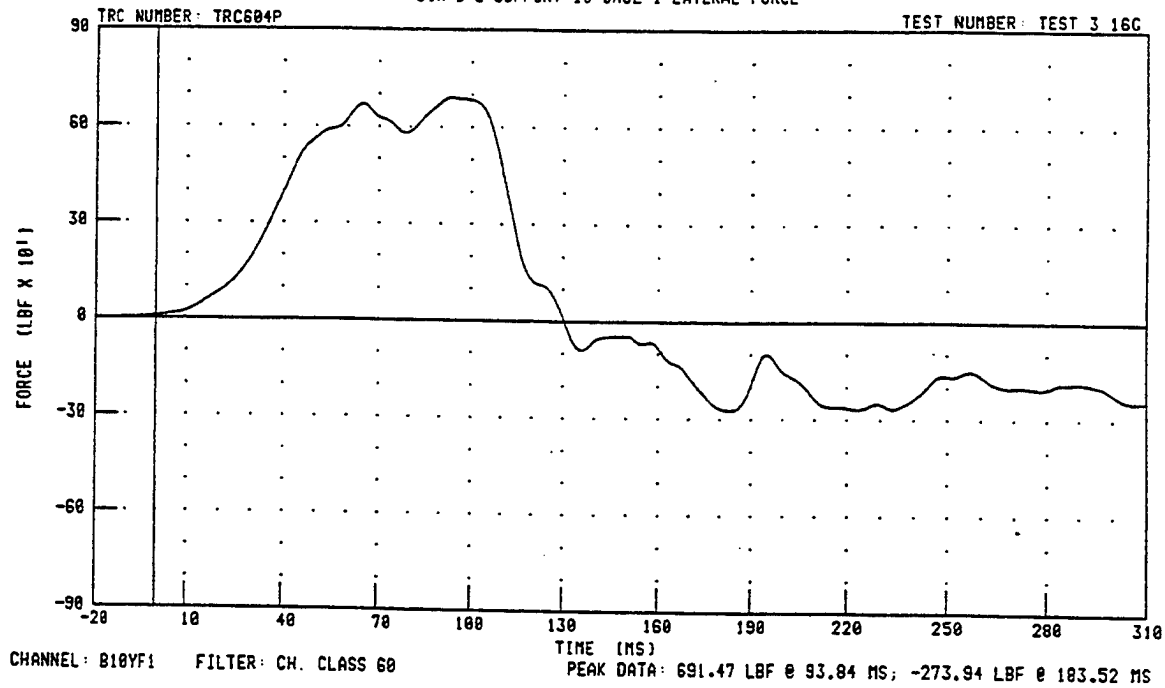
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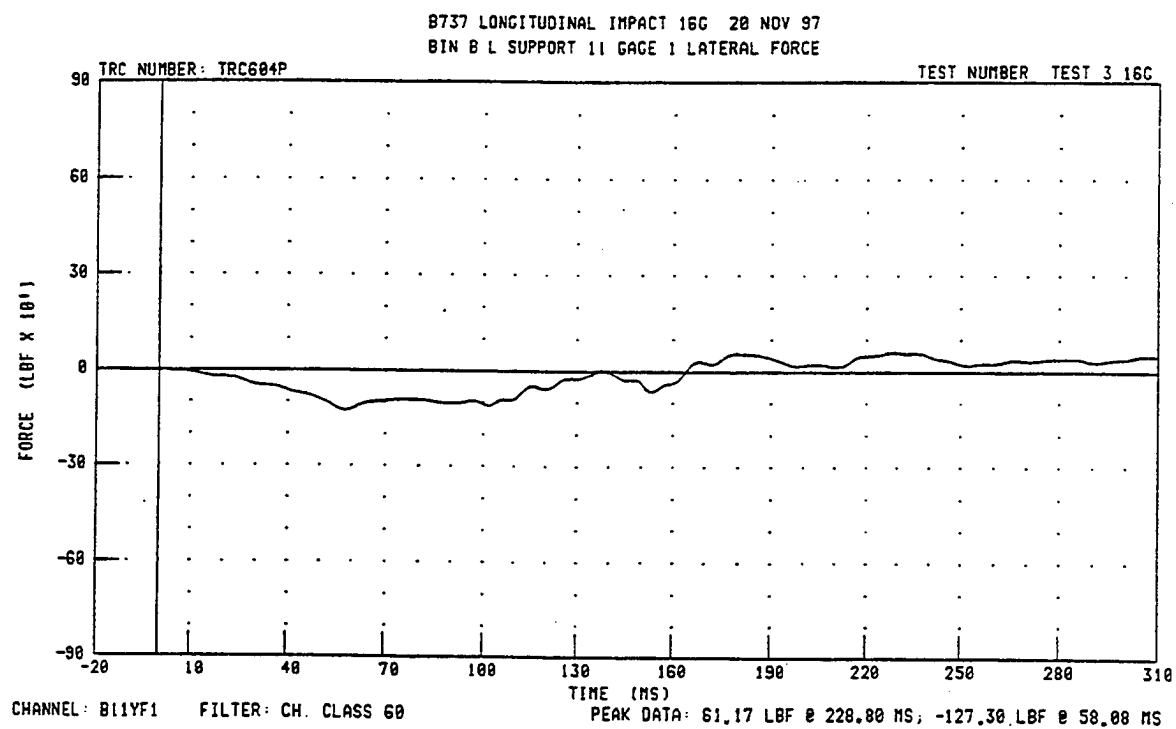
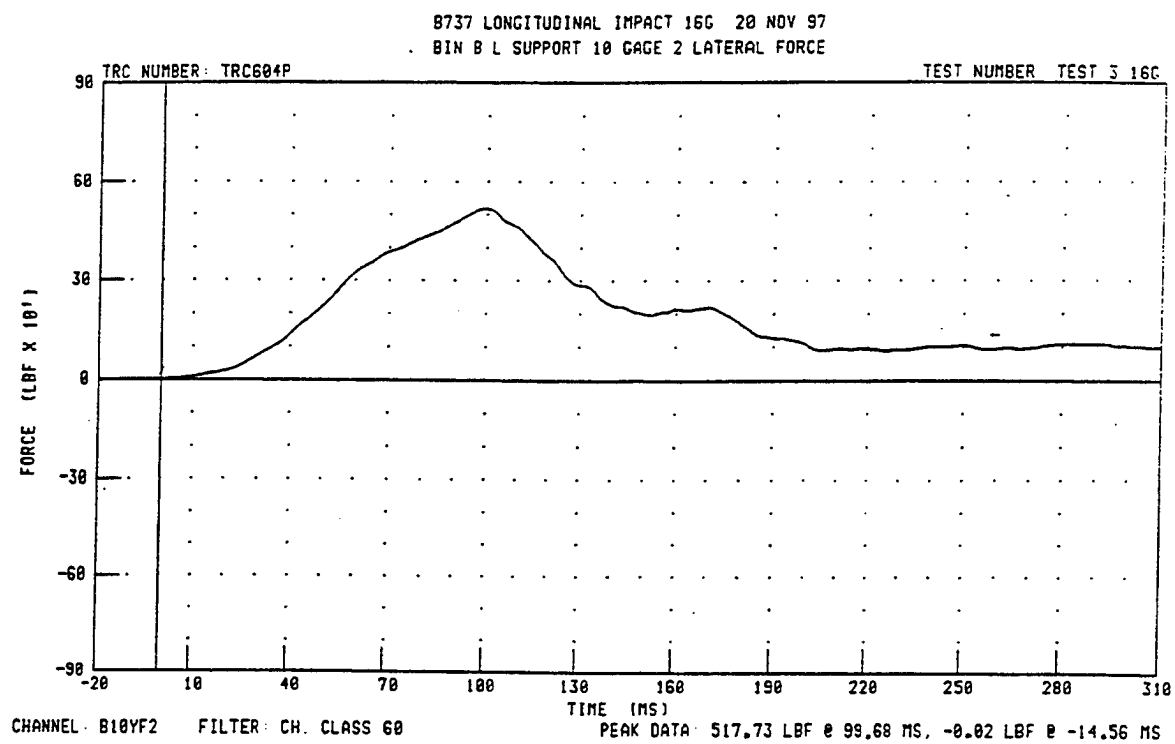


B737 LONGITUDINAL IMPACT 16G 20 NOV 97
BIN B L SUPPORT 9 CAGE 2 LATERAL FORCE



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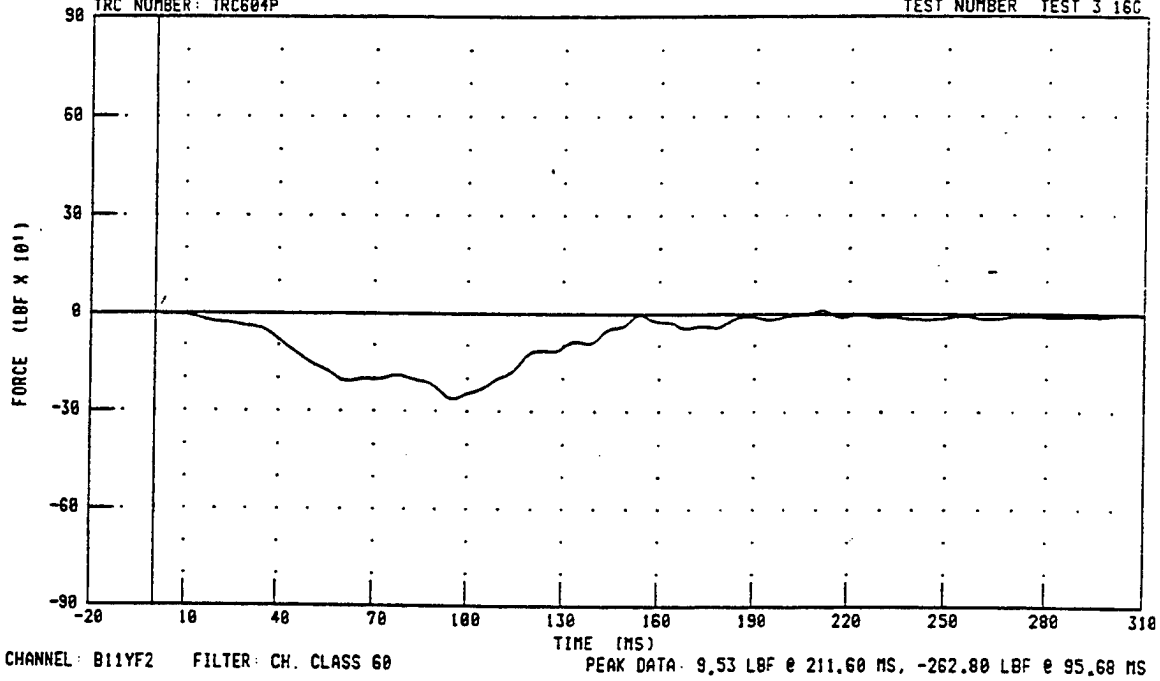




B737 LONGITUDINAL IMPACT 16G 20 NOV 97
BIN B L SUPPORT 11 GAGE 2 LATERAL FORCE

TRC NUMBER: TRC604P

TEST NUMBER TEST 3 16G



APPENDIX C—CALIBRATION DATA

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OVERHEAD STOWAGE BIN B STATIC CALIBRATION - PULL 2

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OVERHEAD STOWAGE BIN A STATIC CALIBRATION - PULL 1

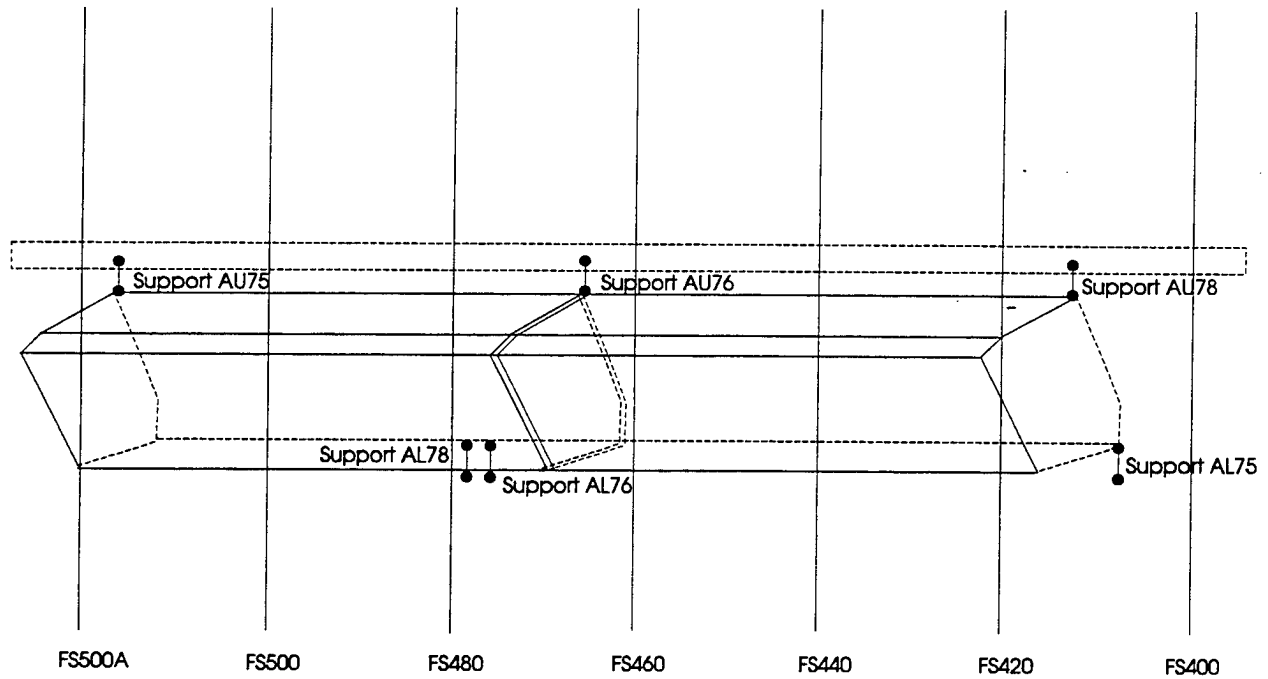


FIGURE C-1. BIN A INSTRUMENTATION LOCATIONS

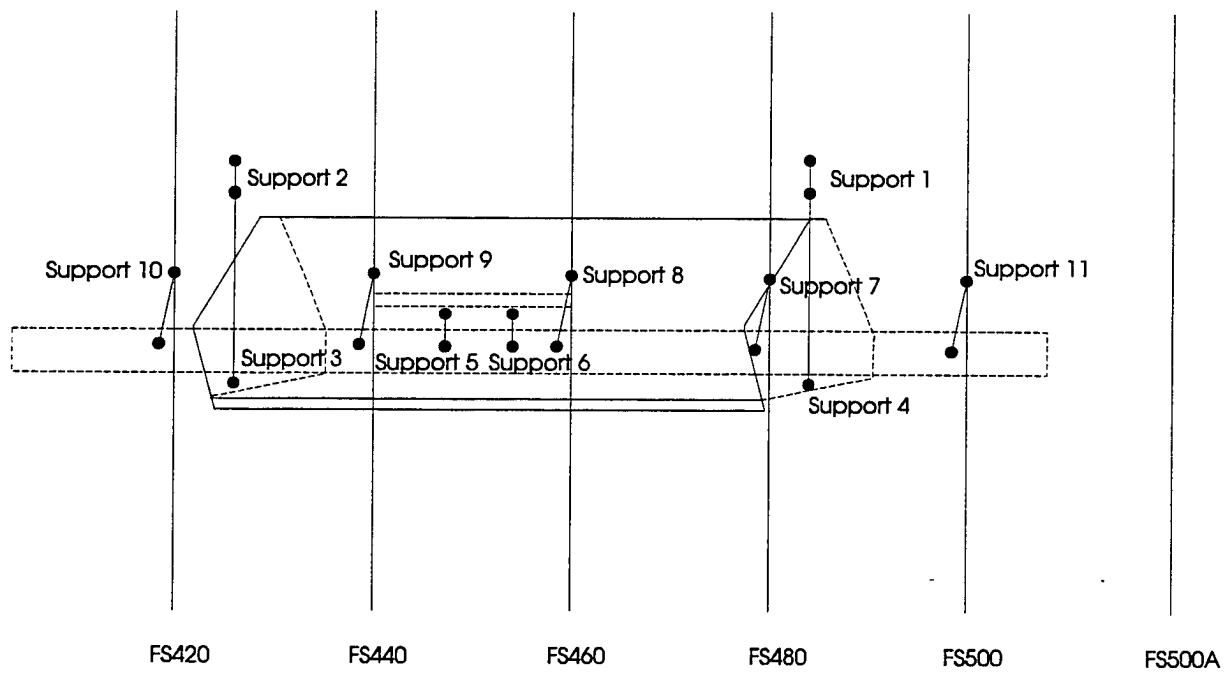


FIGURE C-2. BIN B INSTRUMENTATION LOCATIONS

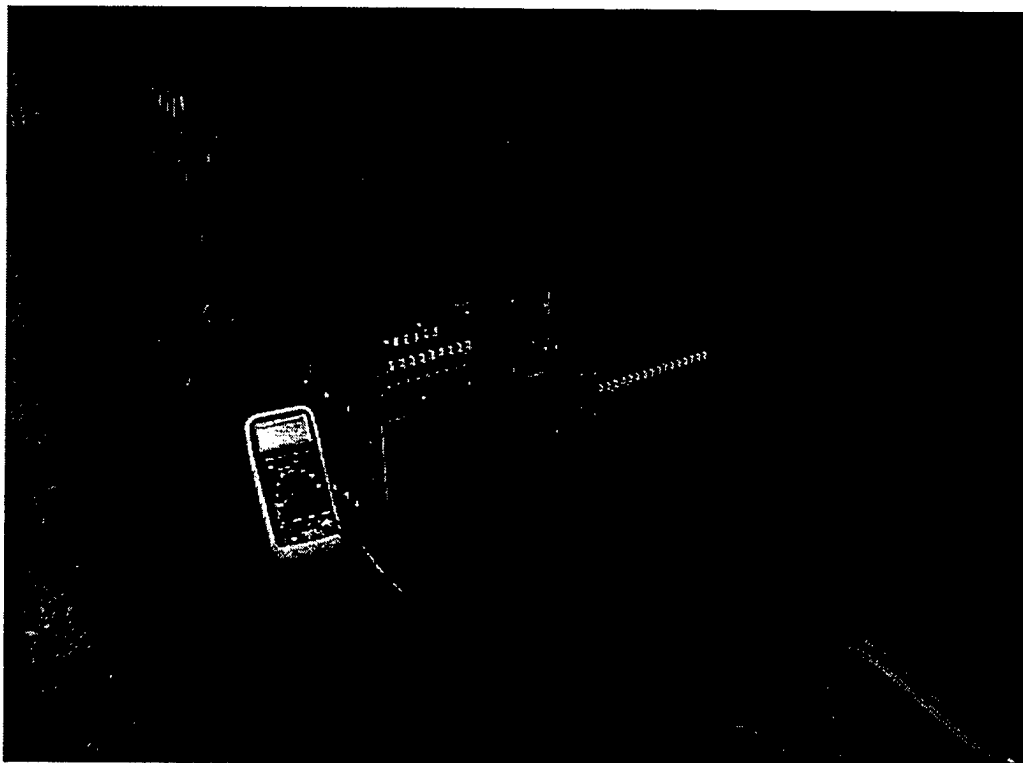


FIGURE C-3. FRONT VIEW OF DATA ACQUISITION SYSTEM

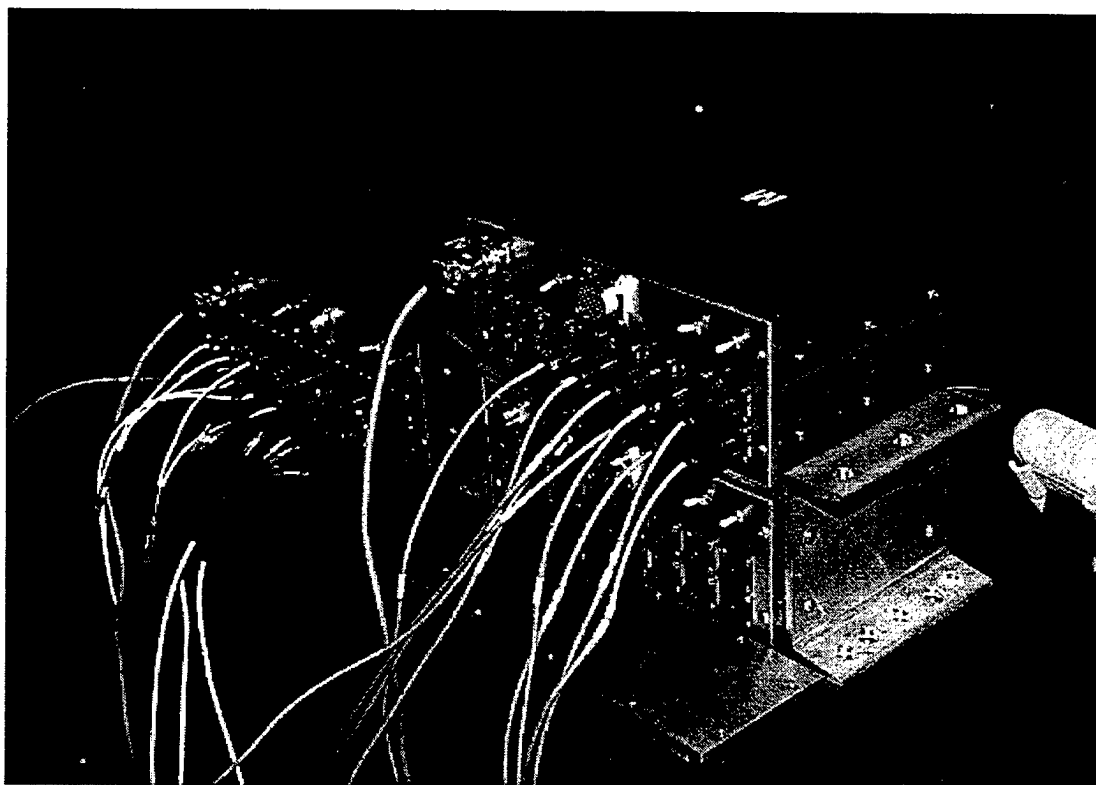


FIGURE C-4. REAR VIEW OF DATA ACQUISITION SYSTEM

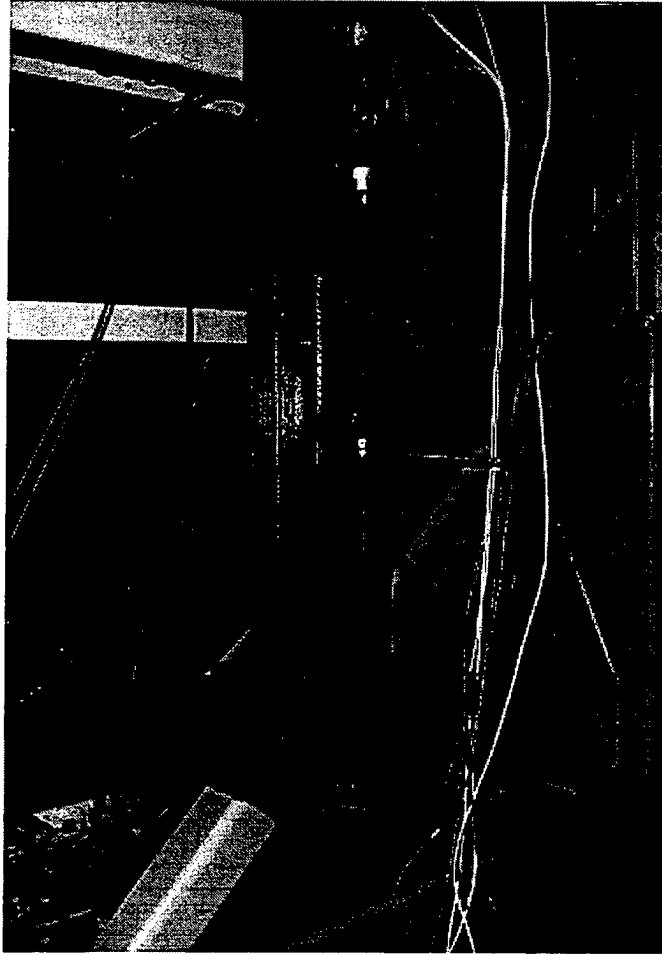


FIGURE C-5. FRONT ANGLE VIEW OF STEEL CABLE TENSIONING DEVICE

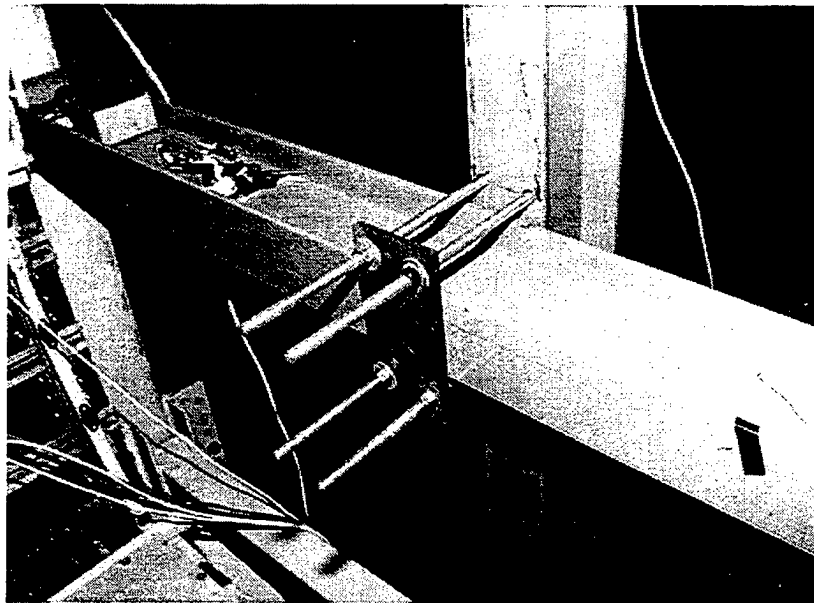


FIGURE C-6. CALIBRATION TEST FIXTURE VIEW 1

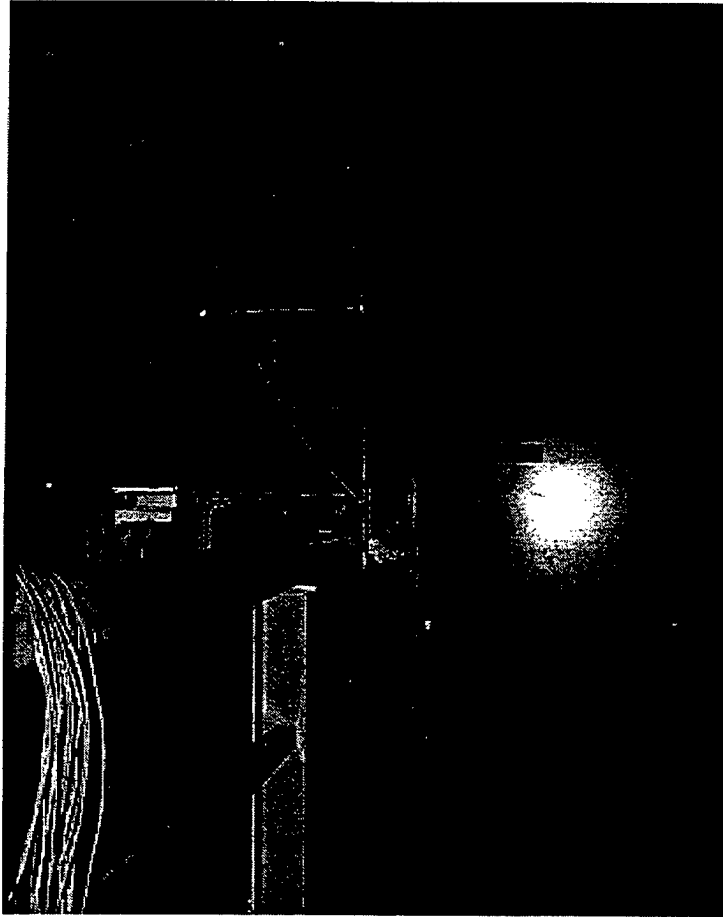


FIGURE C-7. CALIBRATION TEST FIXTURE VIEW 2

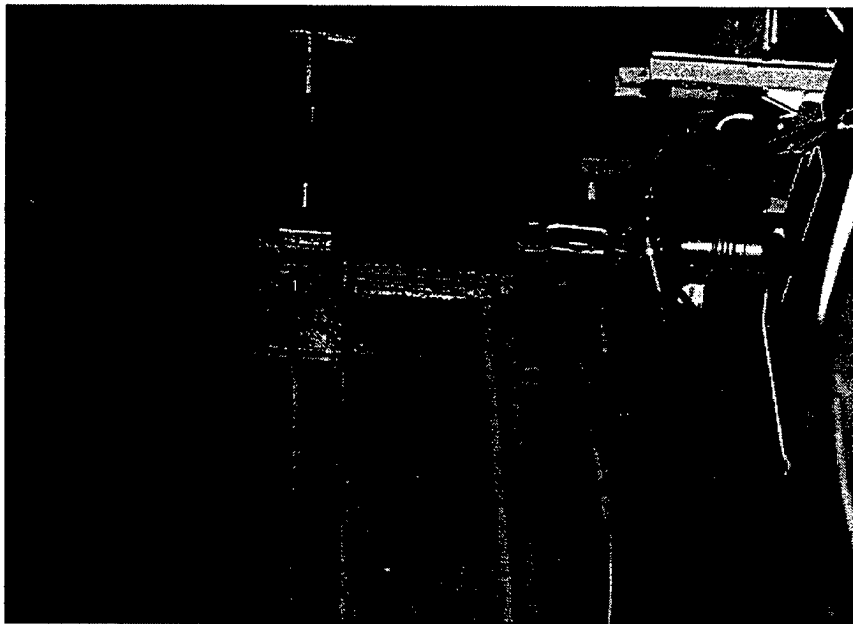


FIGURE C-8. CALIBRATION TEST FIXTURE VIEW 3

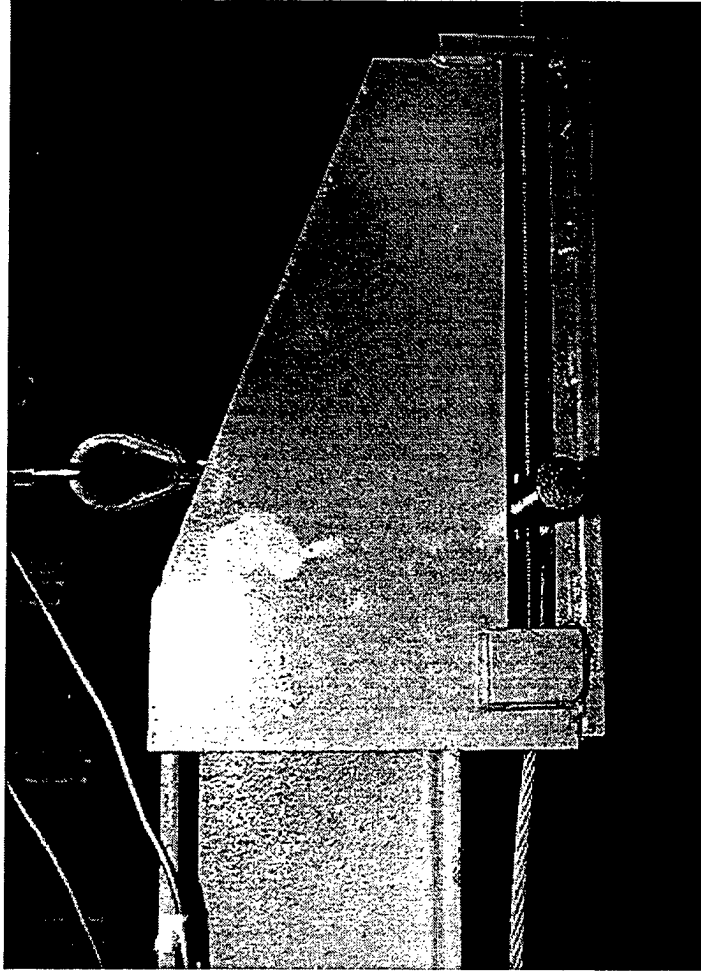


FIGURE C-9. CALIBRATION TEST FIXTURE VIEW 4

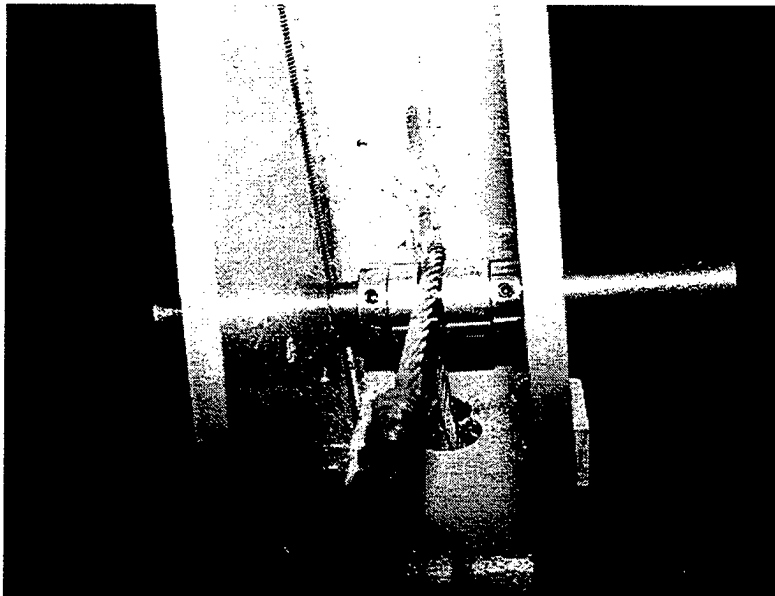


FIGURE C-10. CALIBRATION TEST FIXTURE VIEW 5

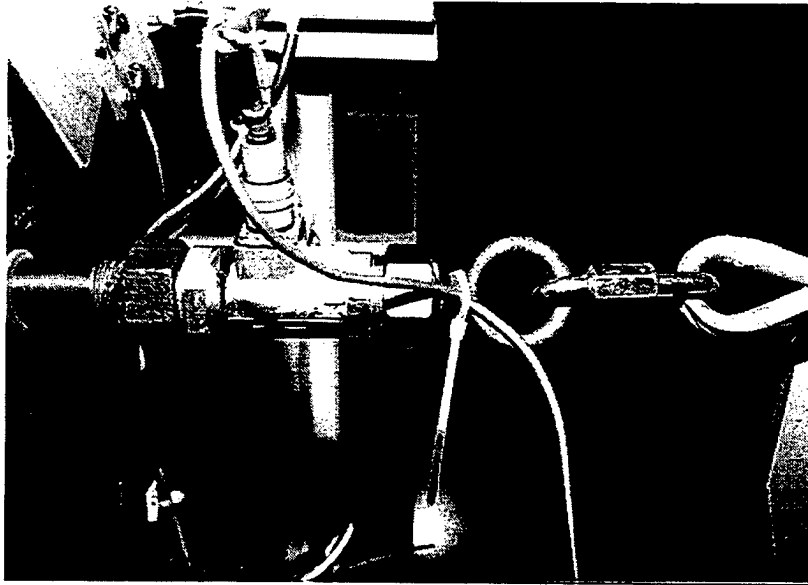


FIGURE C-11. CALIBRATION FORCE TRANSDUCER SIDE VIEW

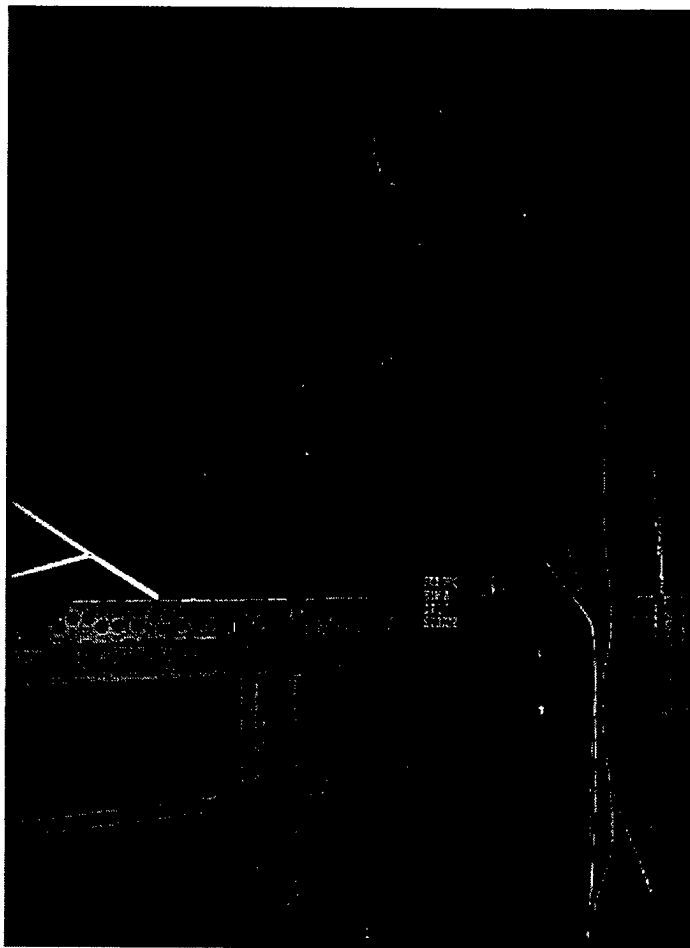


FIGURE C-12. PRETEST BIN A AND TEST FIXTURE FRONT RIGHT ANGLE
OVERALL VIEW

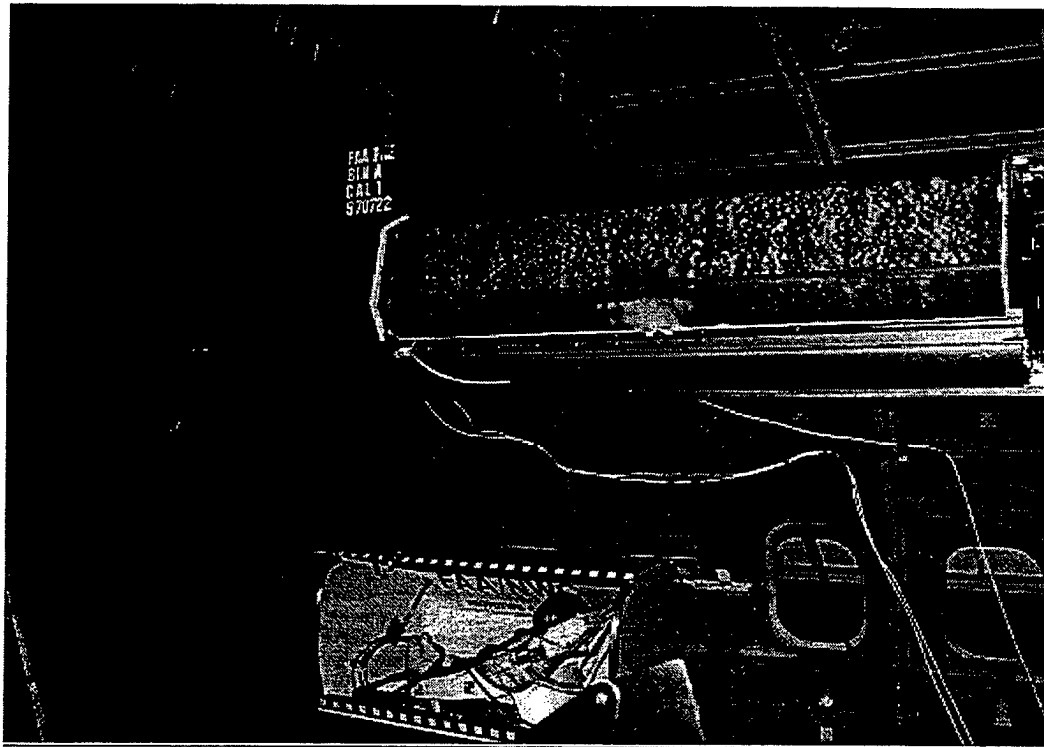


FIGURE C-13. PRETEST BIN A SIDE VIEW

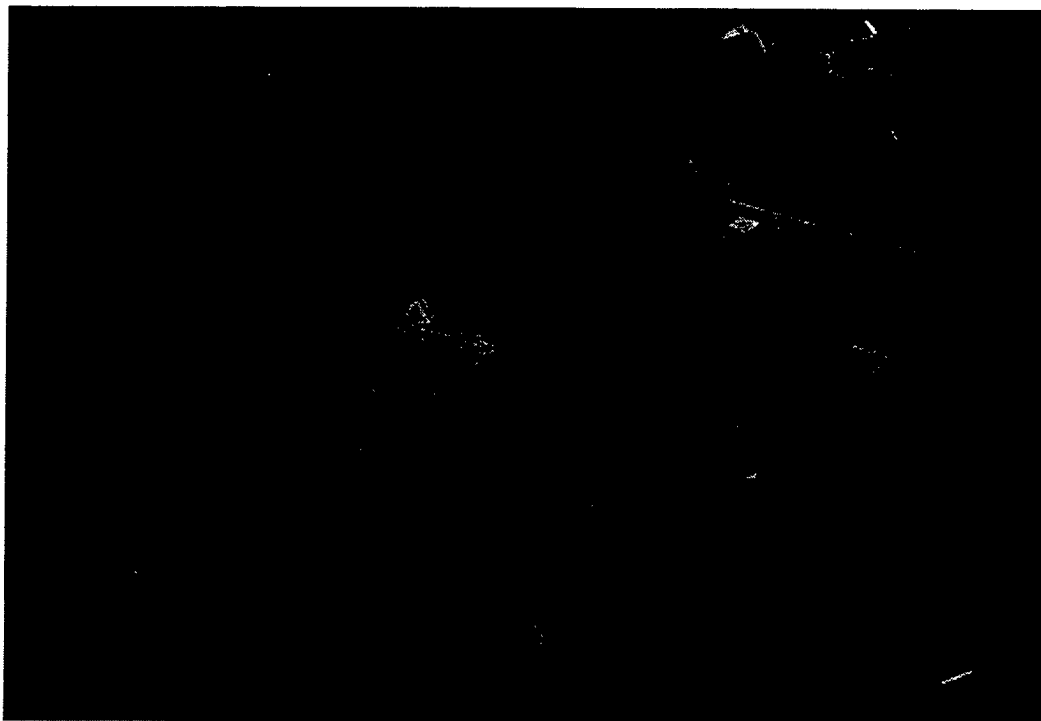


FIGURE C-14. PRETEST BIN A FRONT RIGHT ANGLE VIEW

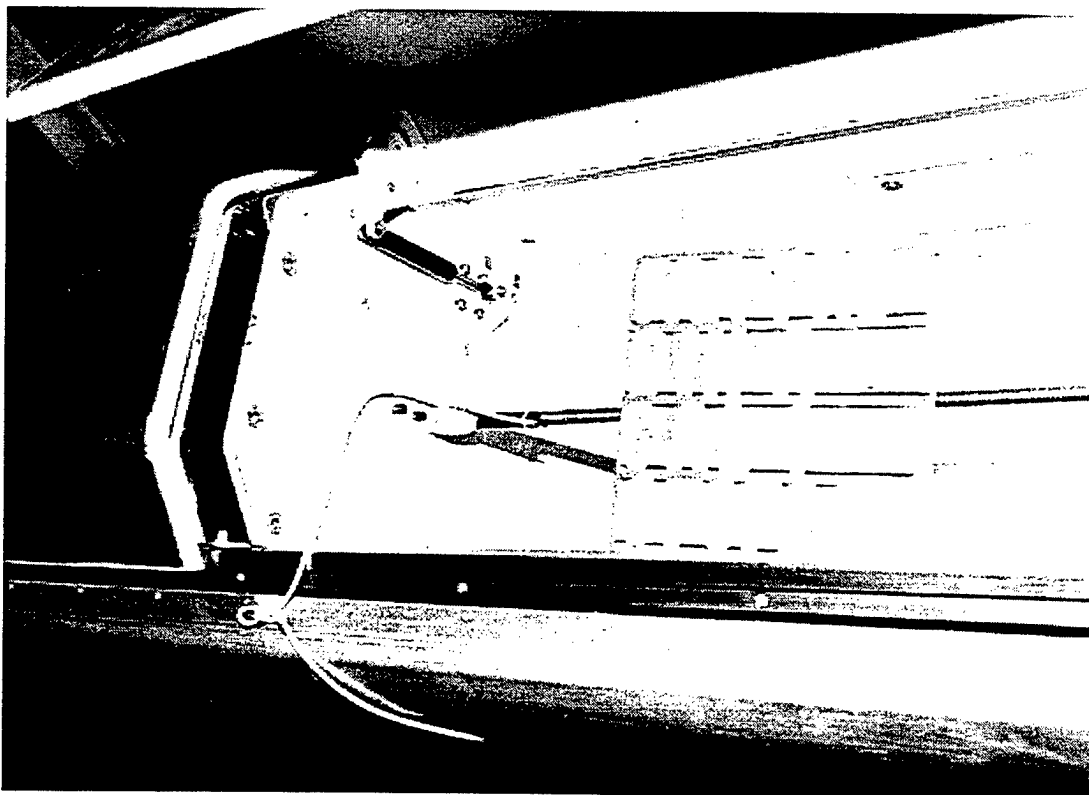


FIGURE C-15. PRETEST BIN A LINEAR POTENTIOMETER ATTACHMENT VIEW

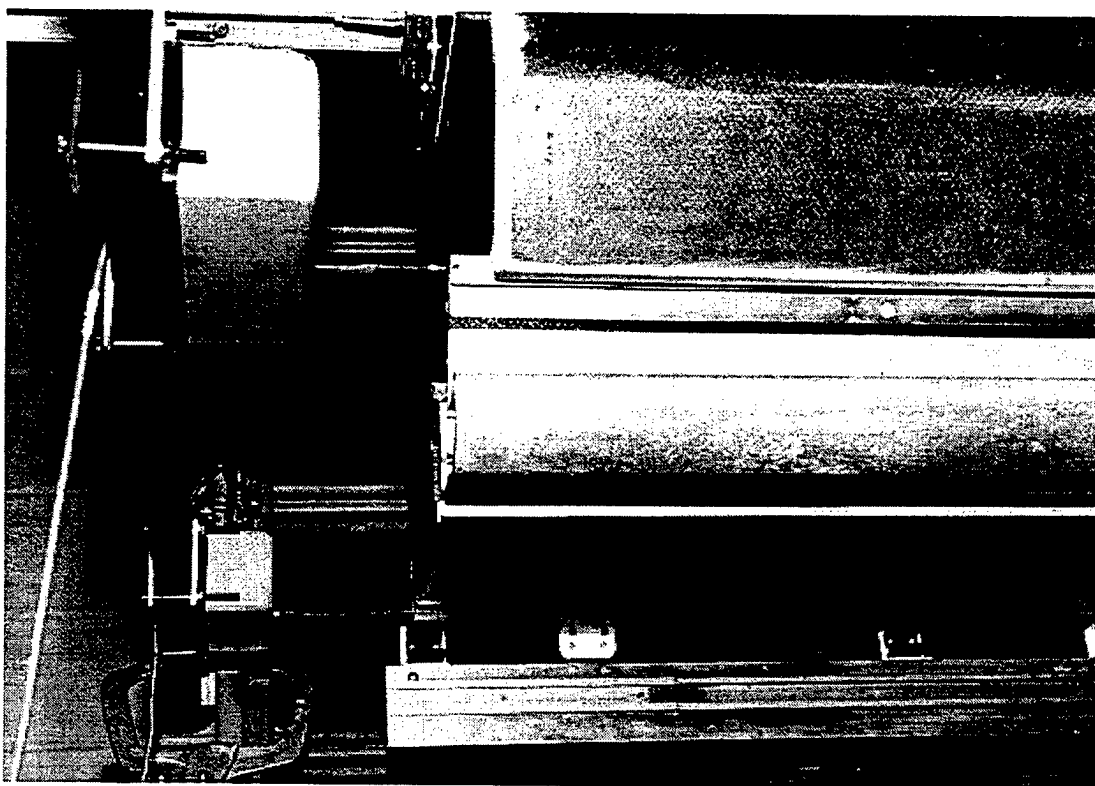


FIGURE C-16. PRETEST BIN A STRING POTENTIOMETER ATTACHMENT SIDE VIEW



FIGURE C-17. PRETEST BIN A AND STRING POTENTIOMETER ATTACHMENT
REAR ANGLE VIEW



FIGURE C-18. PRETEST BIN A BETWEEN FRONT AND REAR
SECTIONS SIDE VIEW

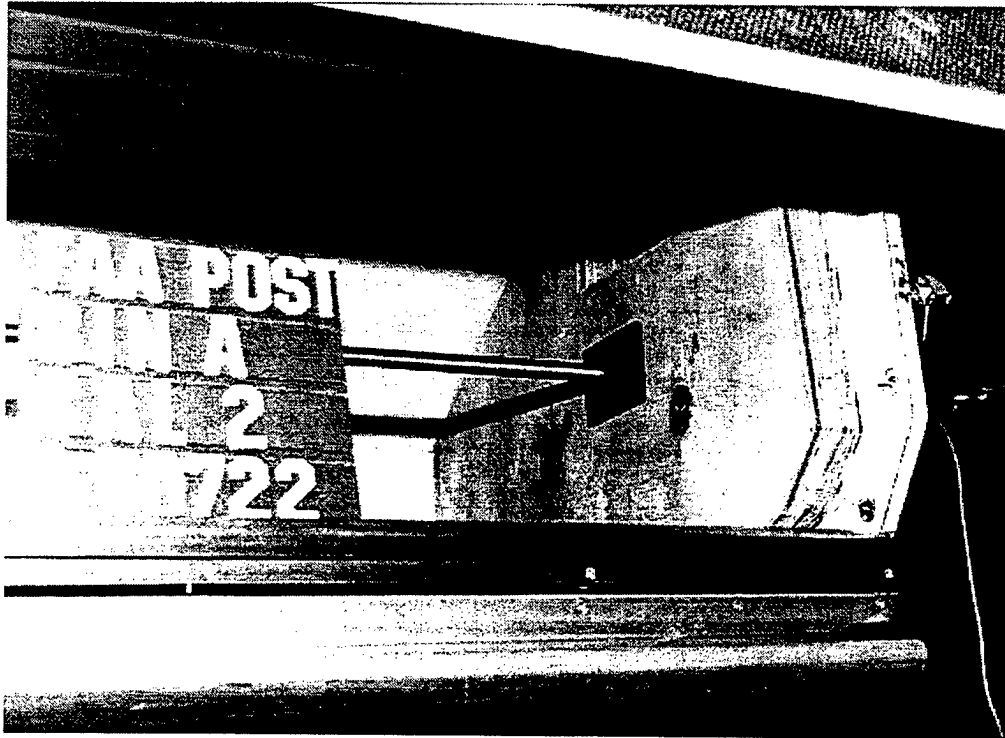


FIGURE C-19. PRETEST BIN A THREADED ROD ATTACHMENT TO FRONT SECTION VIEW

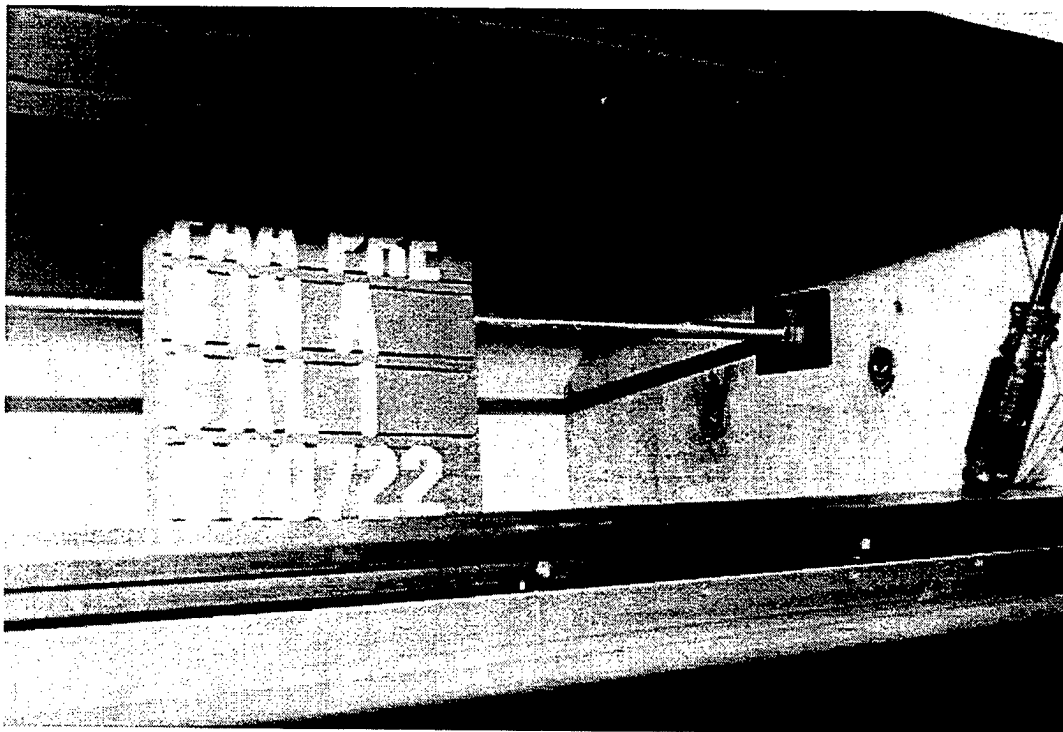


FIGURE C-20. PRETEST BIN A THREADED ROD ATTACHMENT TO REAR SECTION VIEW

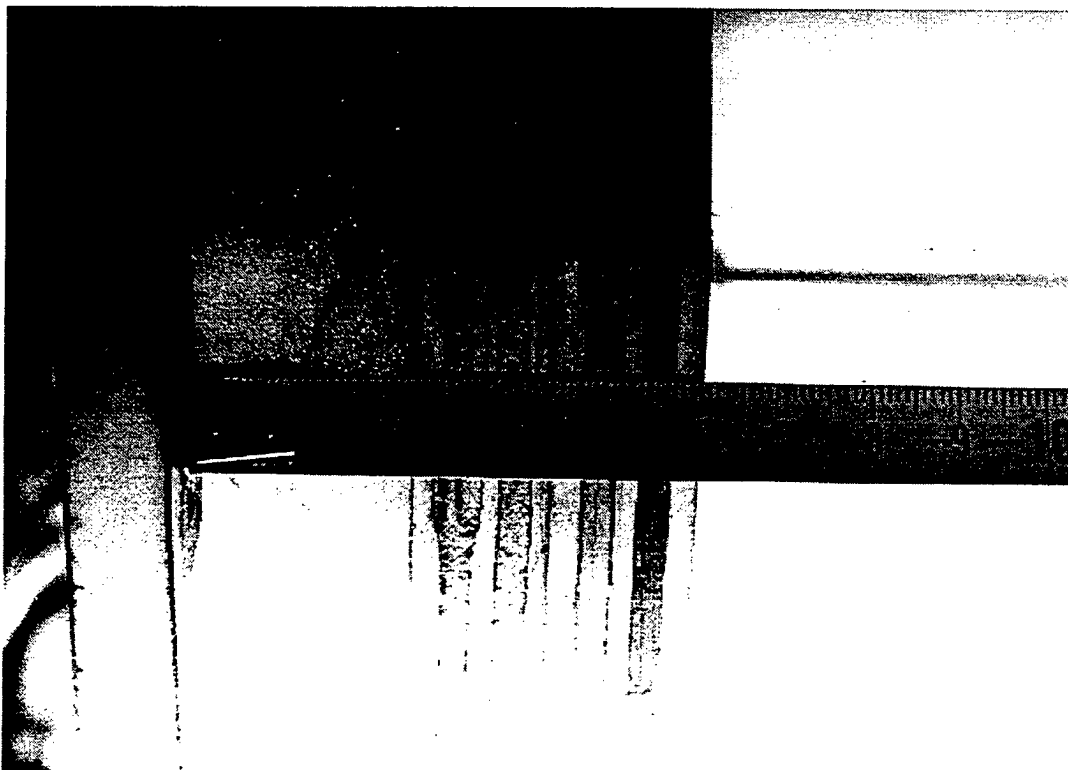


FIGURE C-21. PRETEST BIN A FOAM AND PLYWOOD BASE FOR LOAD APPLICATION VIEW

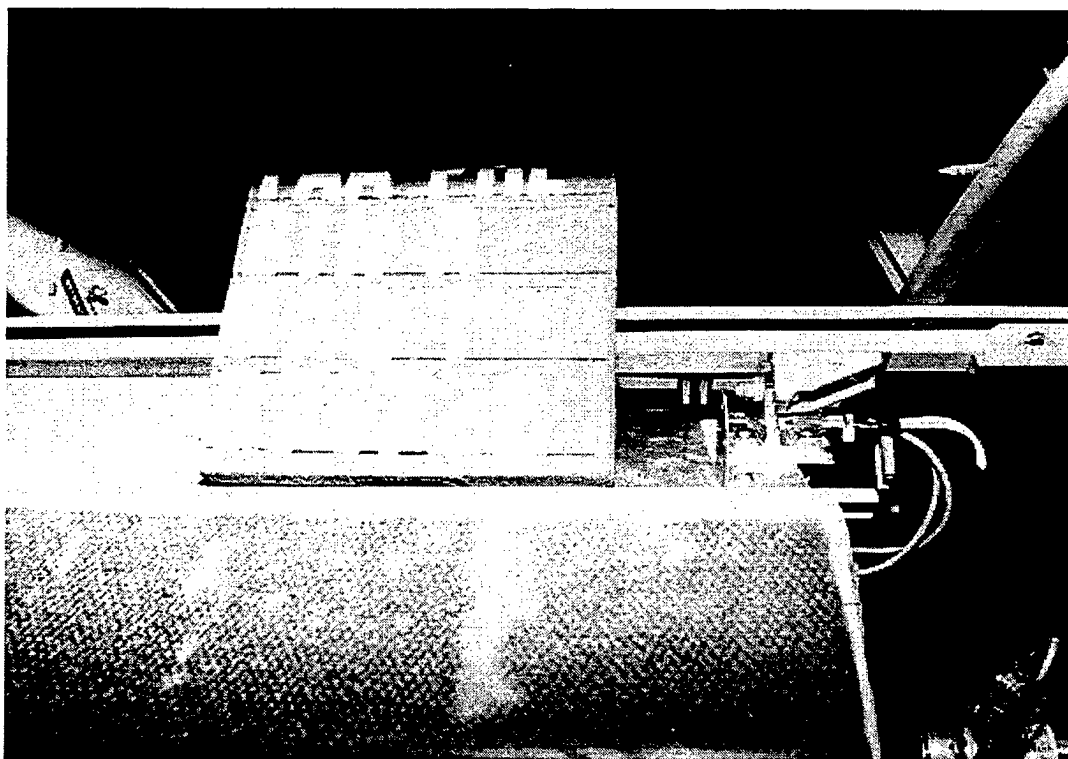


FIGURE C-22. PRETEST BIN A UPPER FRONT SUPPORT SIDE VIEW

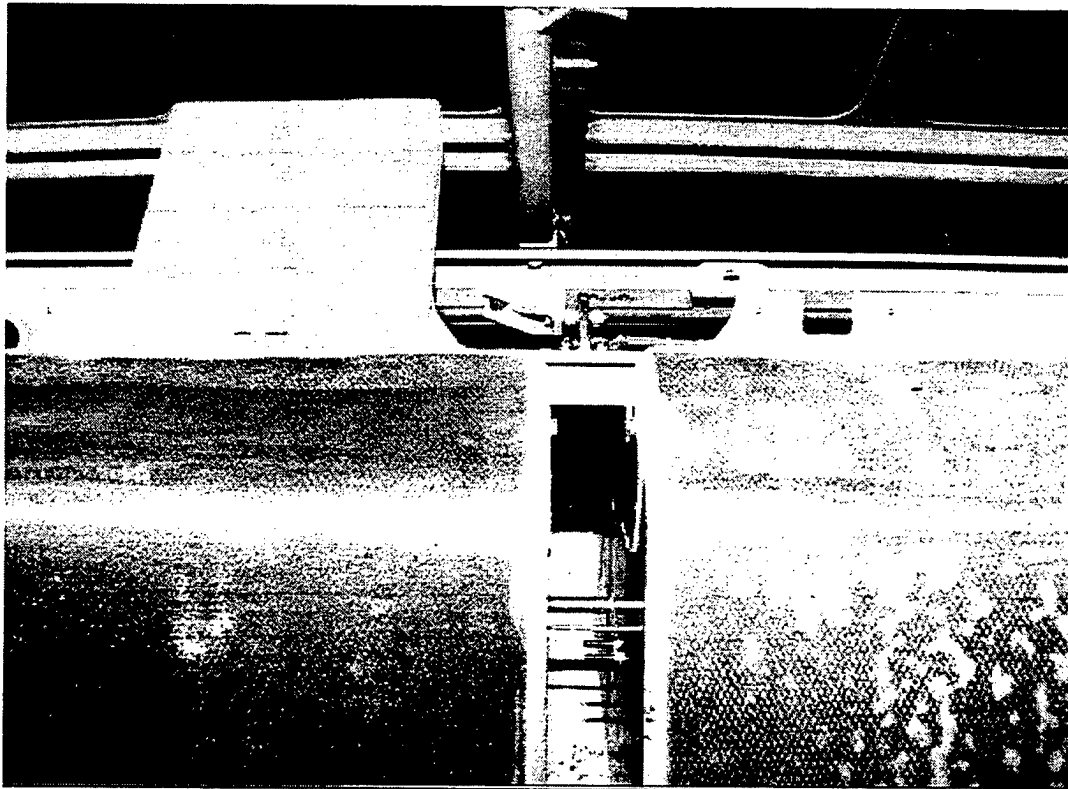


FIGURE C-23. PRETEST BIN A UPPER MID SUPPORT SIDE VIEW 1

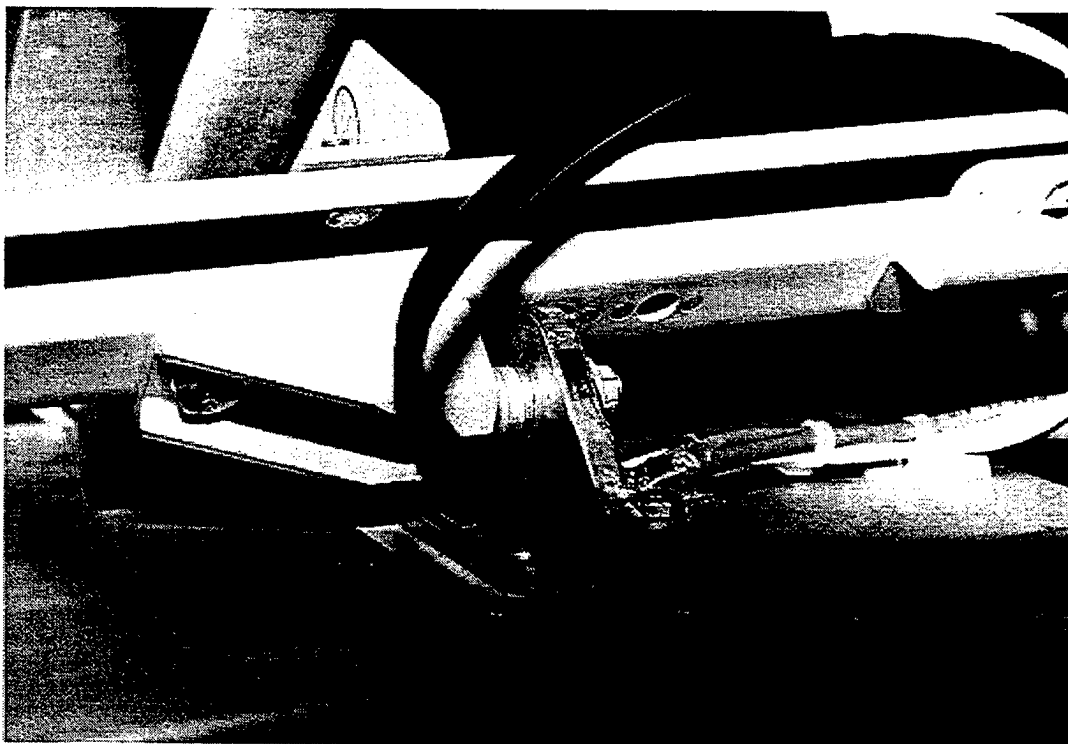


FIGURE C-24. PRETEST BIN A UPPER MID SUPPORT SIDE VIEW 2

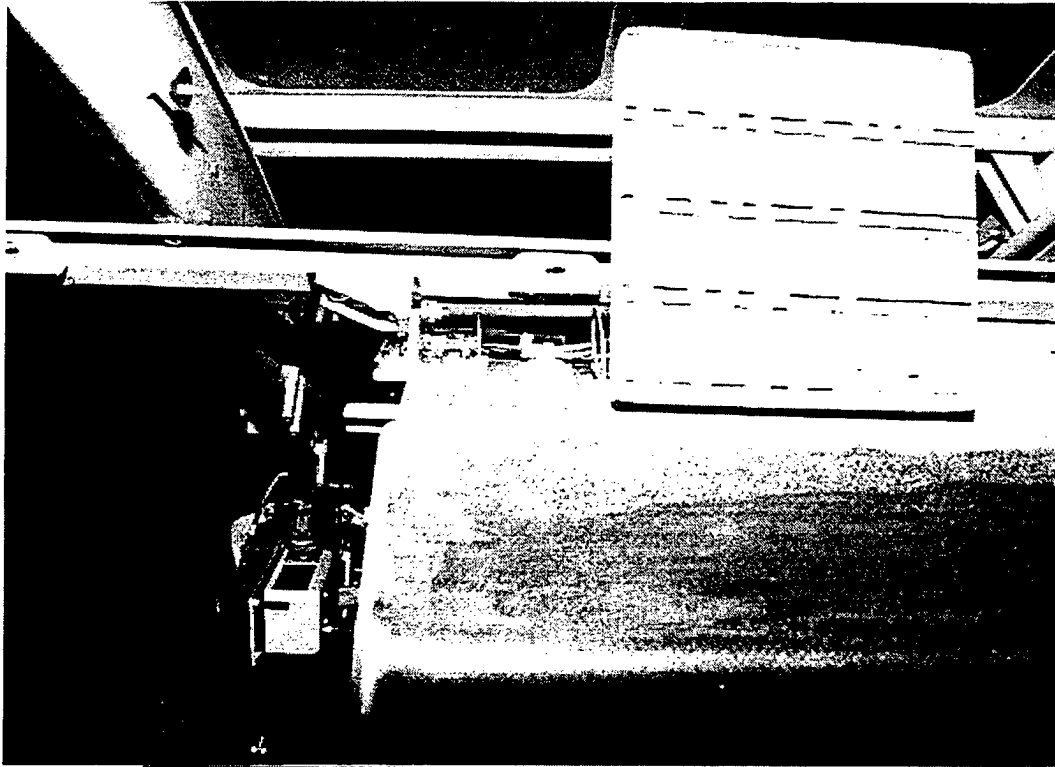


FIGURE C-25. PRETEST BIN A UPPER AFT SUPPORT SIDE VIEW

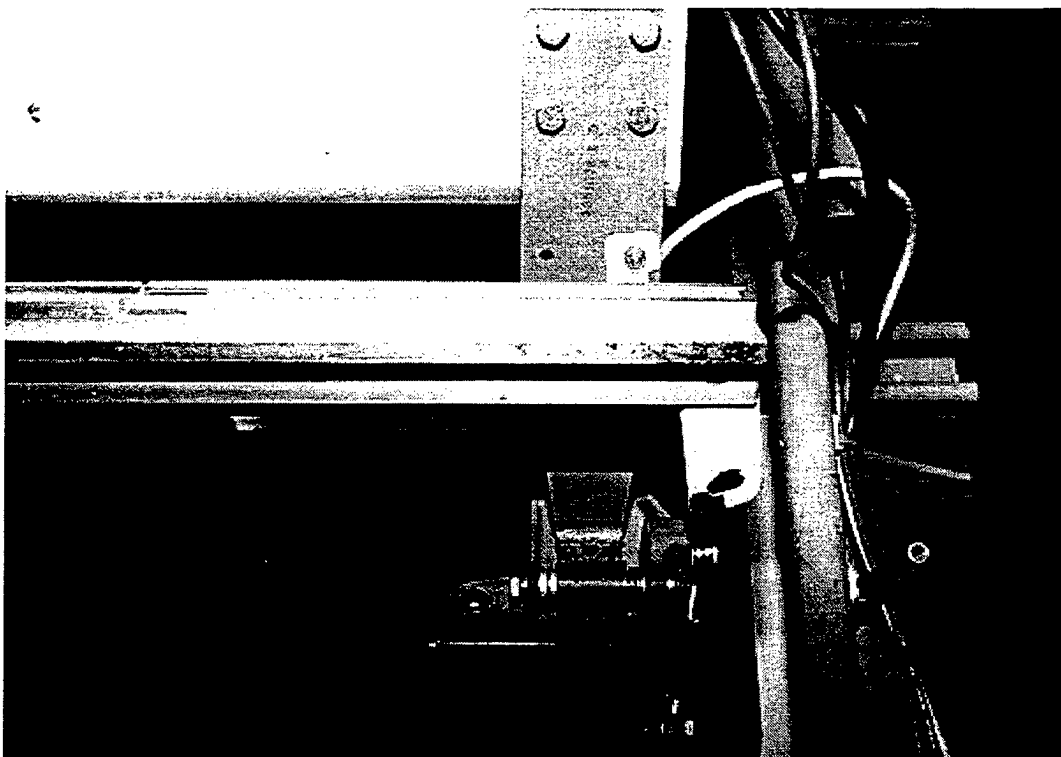


FIGURE C-26. PRETEST BIN A LOWER FRONT SUPPORT BOTTOM VIEW

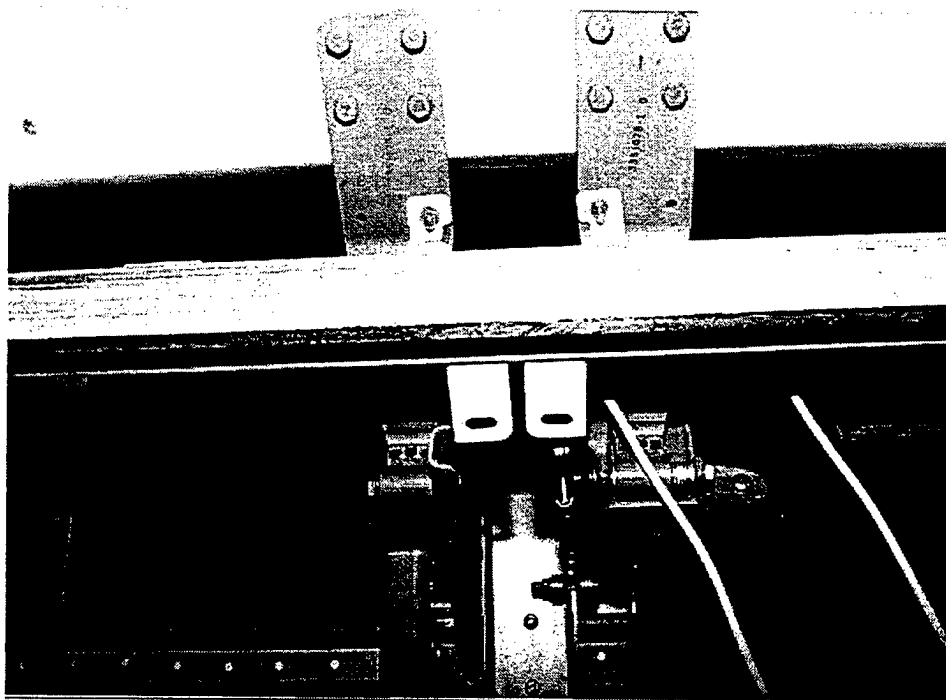


FIGURE C-27. PRETEST BIN A MID AND AFT SUPPORTS BOTTOM VIEW

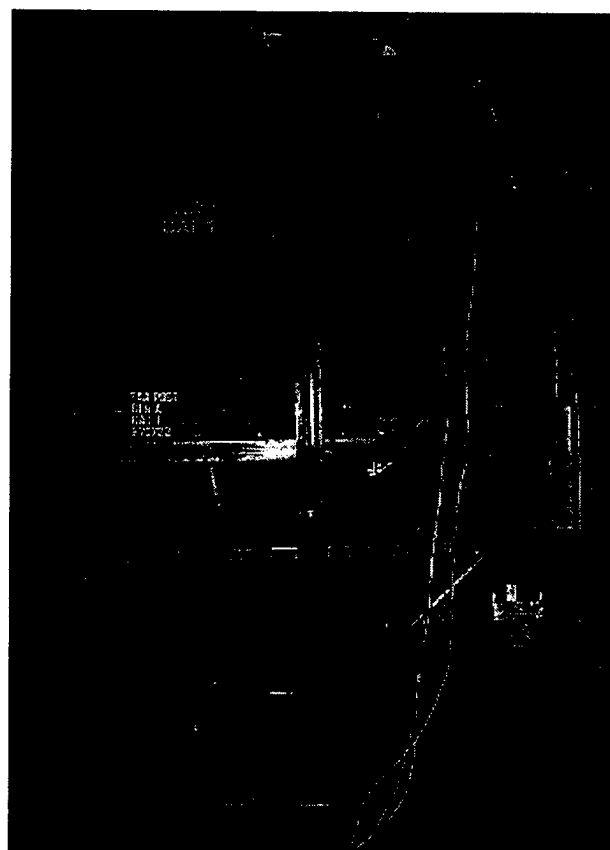


FIGURE C-28. POSTTEST BIN A AND TEST FIXTURE FRONT OVERALL VIEW

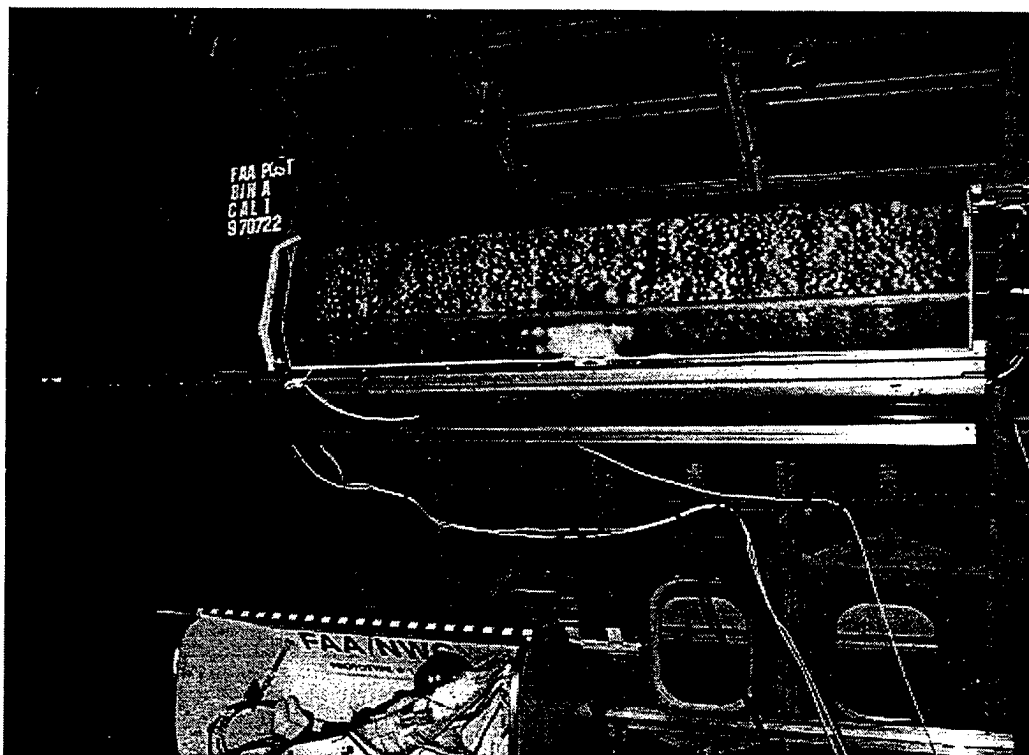


FIGURE C-29. POSTTEST BIN A SIDE VIEW

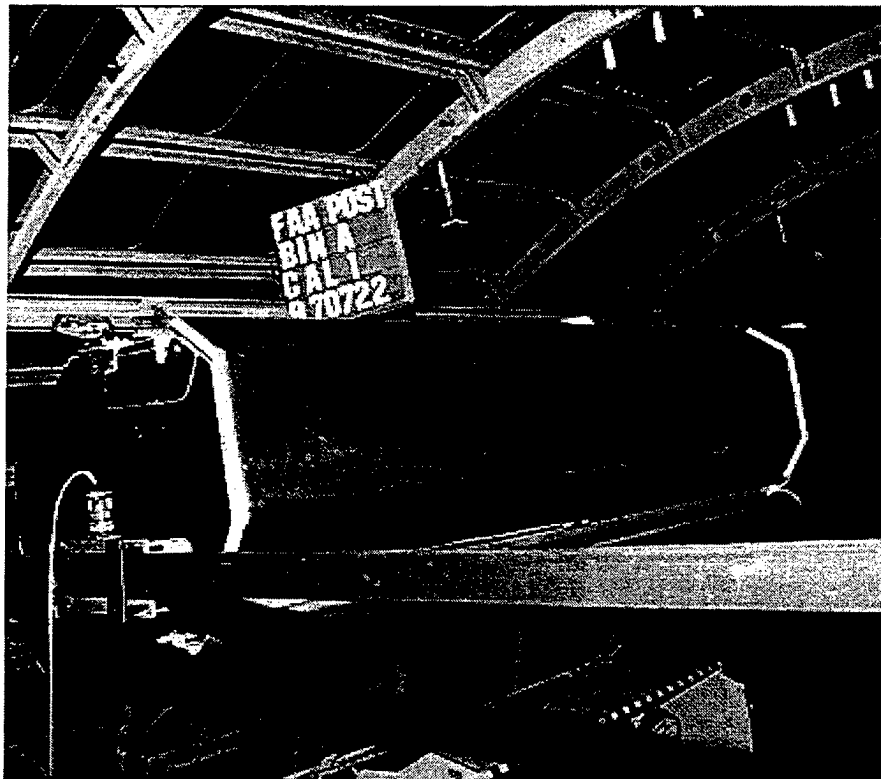


FIGURE C-30. POSTTEST BIN A REAR RIGHT ANGLE VIEW



FIGURE C-31. POSTTEST BIN A BETWEEN FRONT AND REAR SECTIONS
SIDE VIEW

OVERHEAD STOWAGE BIN A STATIC CALIBRATION - PULL 2

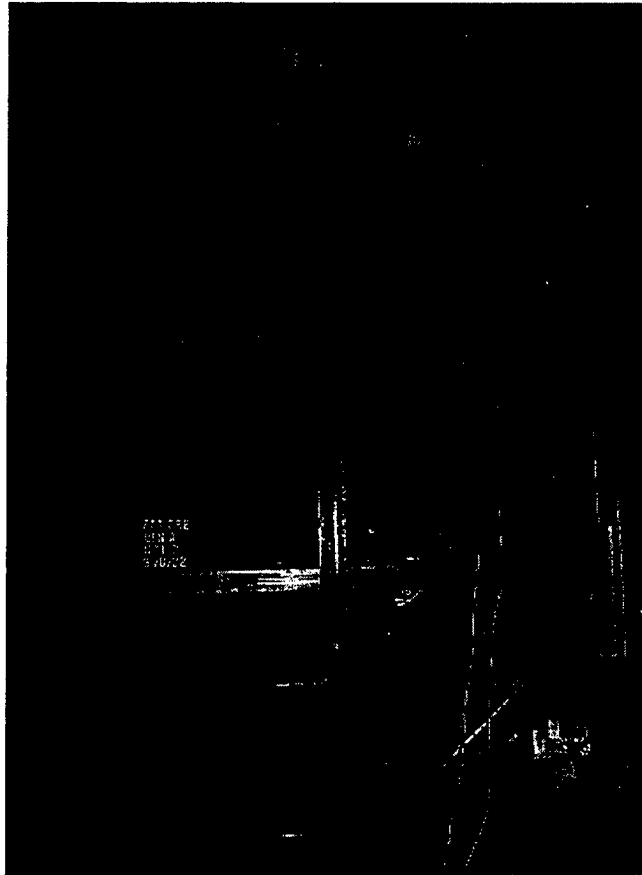


FIGURE C-32. PRETEST BIN A AND TEST FIXTURE FRONT OVERALL VIEW

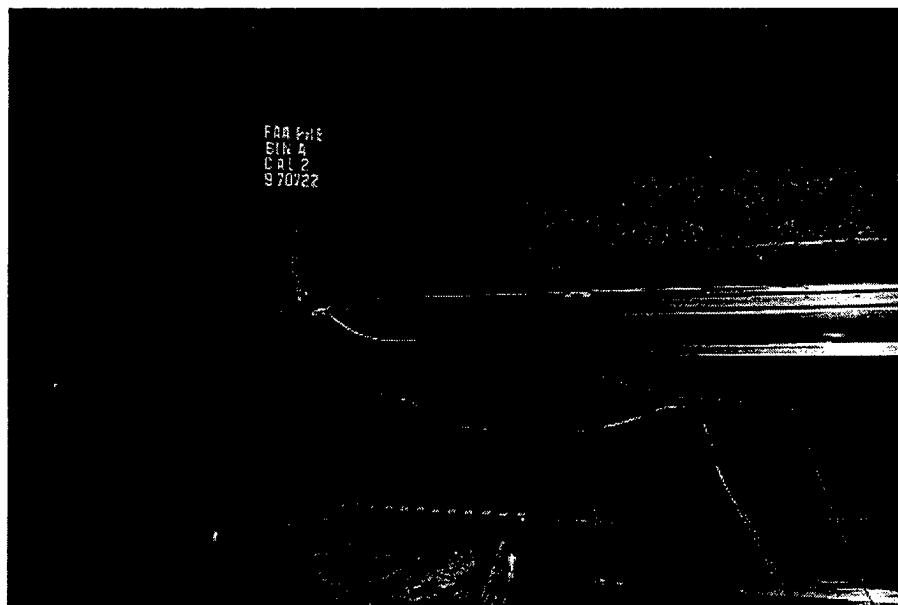


FIGURE C-33. PRETEST BIN A SIDE VIEW



FIGURE C-34. PRETEST BIN A REAR RIGHT ANGLE VIEW



FIGURE C-35. PRETEST BIN A BETWEEN FRONT AND REAR SECTIONS SIDE VIEW

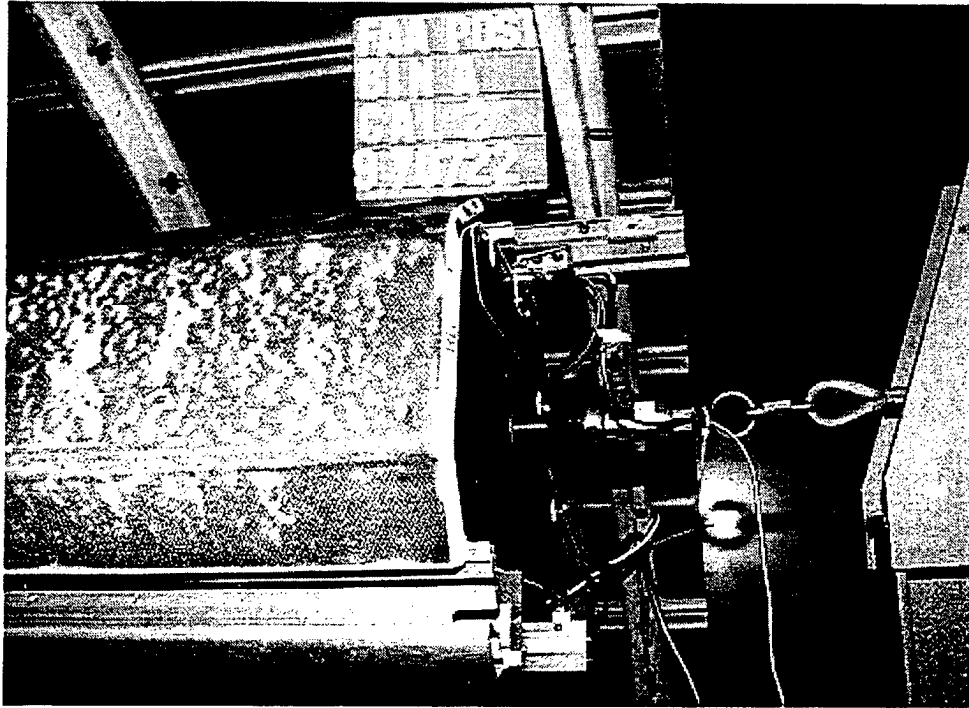


FIGURE C-36. POSTTEST BIN A AND CALIBRATION FORCE TRANSDUCER
SIDE VIEW

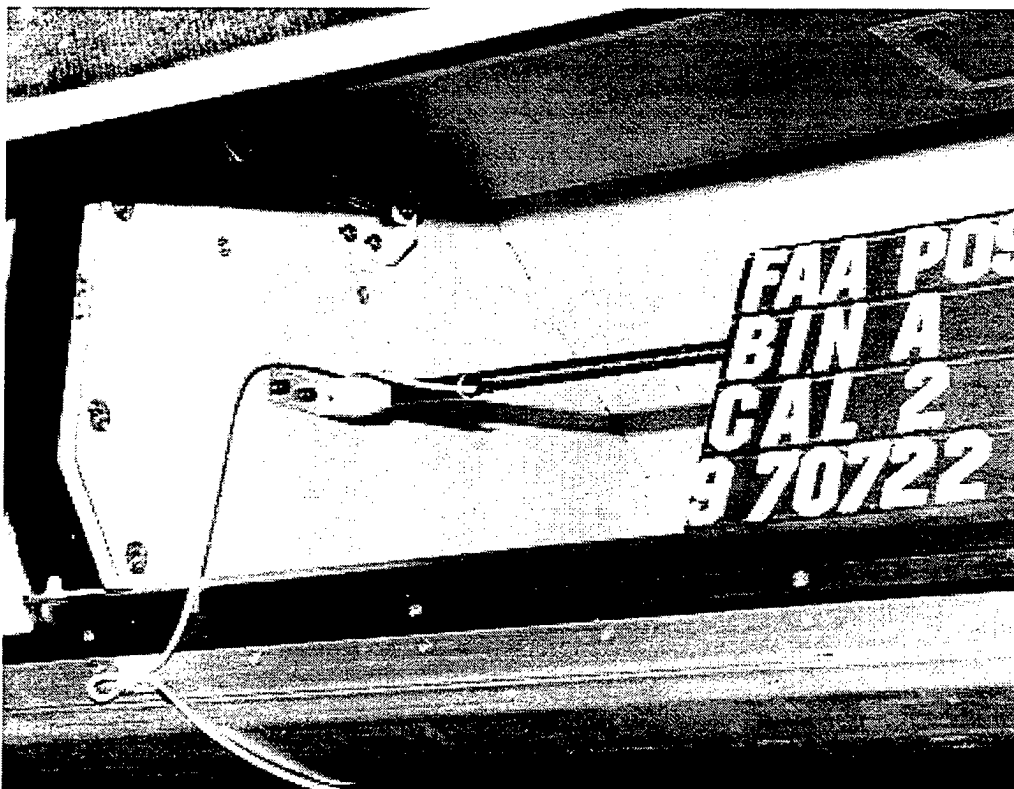


FIGURE C-37. POSTTEST BIN A LINEAR POTENTIOMETER ATTACHMENT VIEW

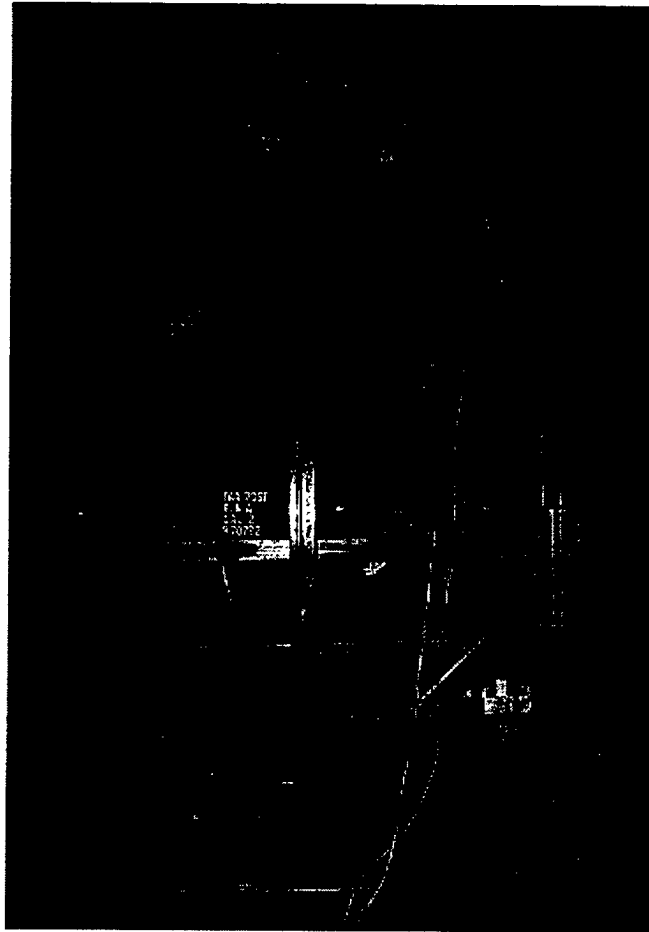


FIGURE C-38. POSTTEST BIN A AND TEST FIXTURE FRONT OVERALL VIEW

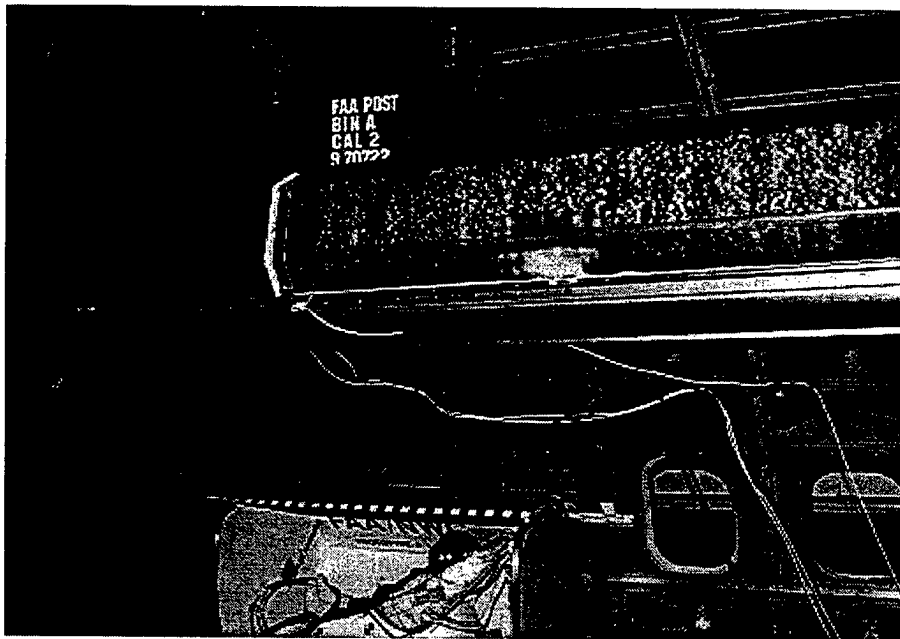


FIGURE C-39. POSTTEST BIN A SIDE VIEW



FIGURE C-40. POSTTEST BIN A REAR RIGHT ANGLE VIEW

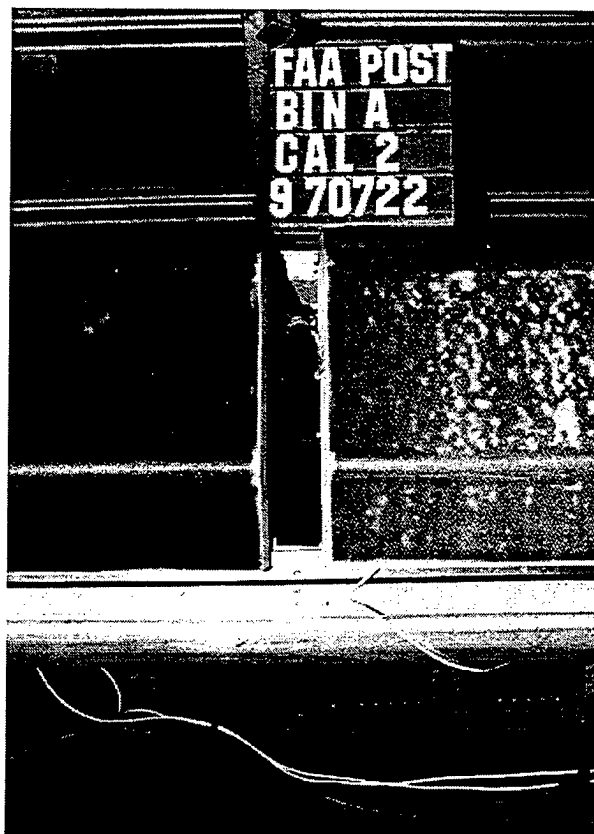


FIGURE C-41. POSTTEST BIN A BETWEEN FRONT AND REAR SECTIONS
SIDE VIEW

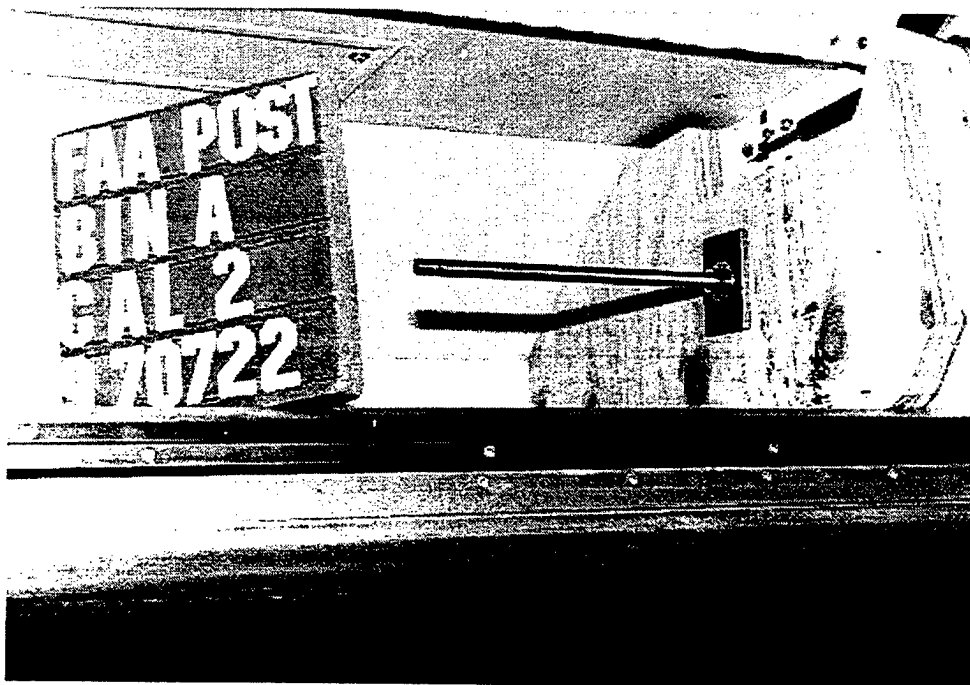


FIGURE C-42. POSTTEST BIN A THREADED ROD ATTACHMENT TO FRONT SECTION VIEW



FIGURE C-43. POSTTEST BIN A THREADED ROD ATTACHMENT TO FRONT AND REAR SECTION VIEW



FIGURE C-44. POSTTEST BIN A REAR SECTION SIDE VIEW

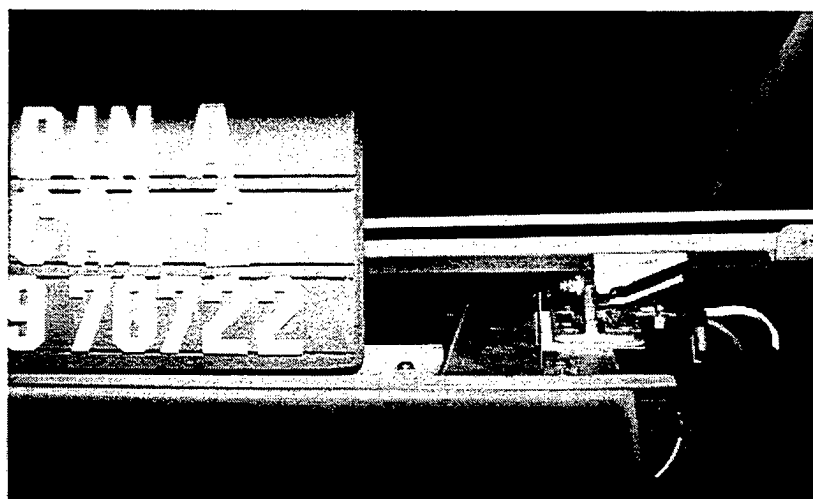


FIGURE C-45. POSTTEST BIN A UPPER FRONT SUPPORT SIDE VIEW

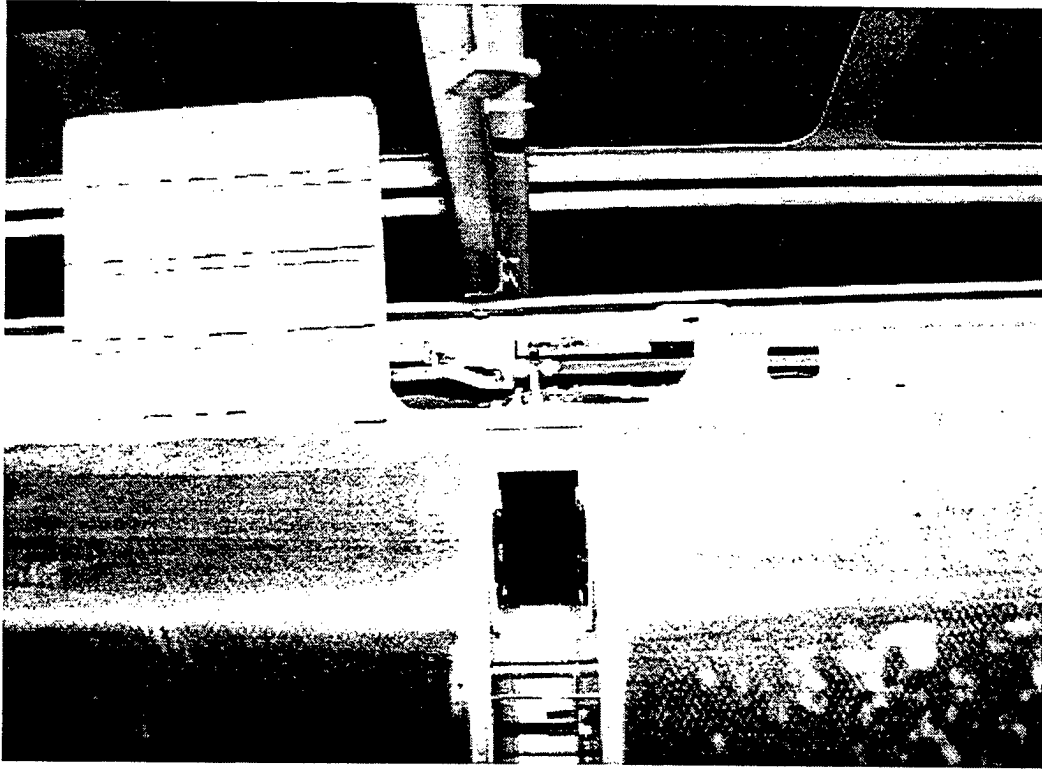


FIGURE C-46. POSTTEST BIN A UPPER MID SUPPORT SIDE VIEW

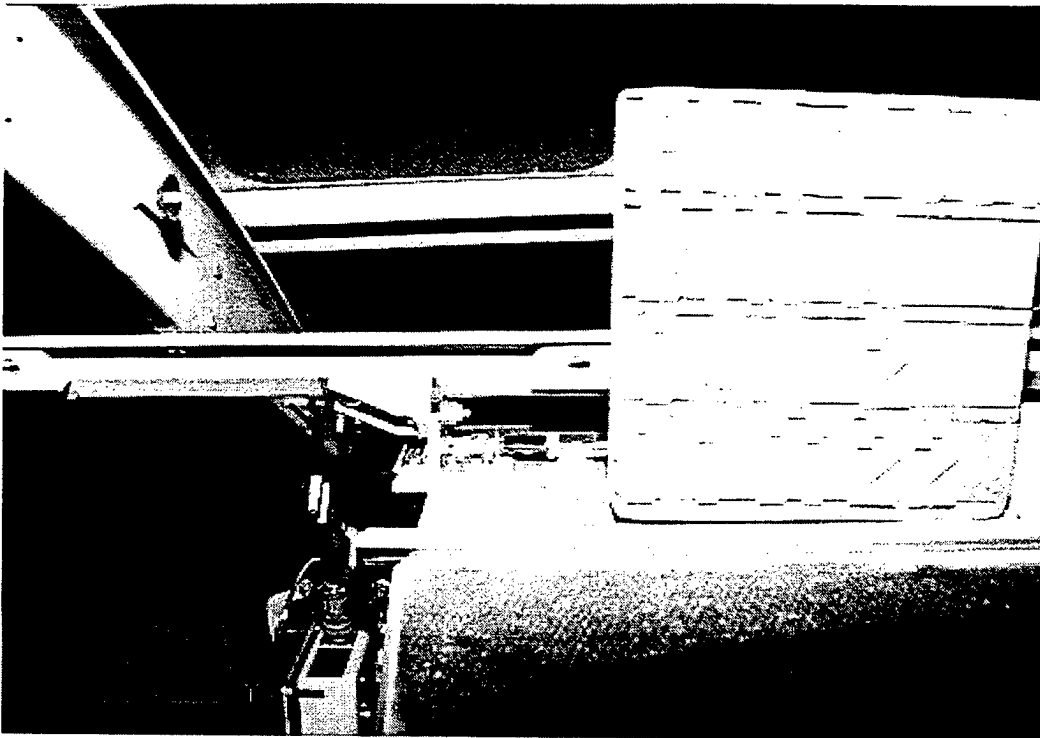


FIGURE C-47. POSTTEST BIN A UPPER AFT SUPPORT SIDE VIEW

OVERHEAD STOWAGE BIN B STATIC CALIBRATION - PULL 1

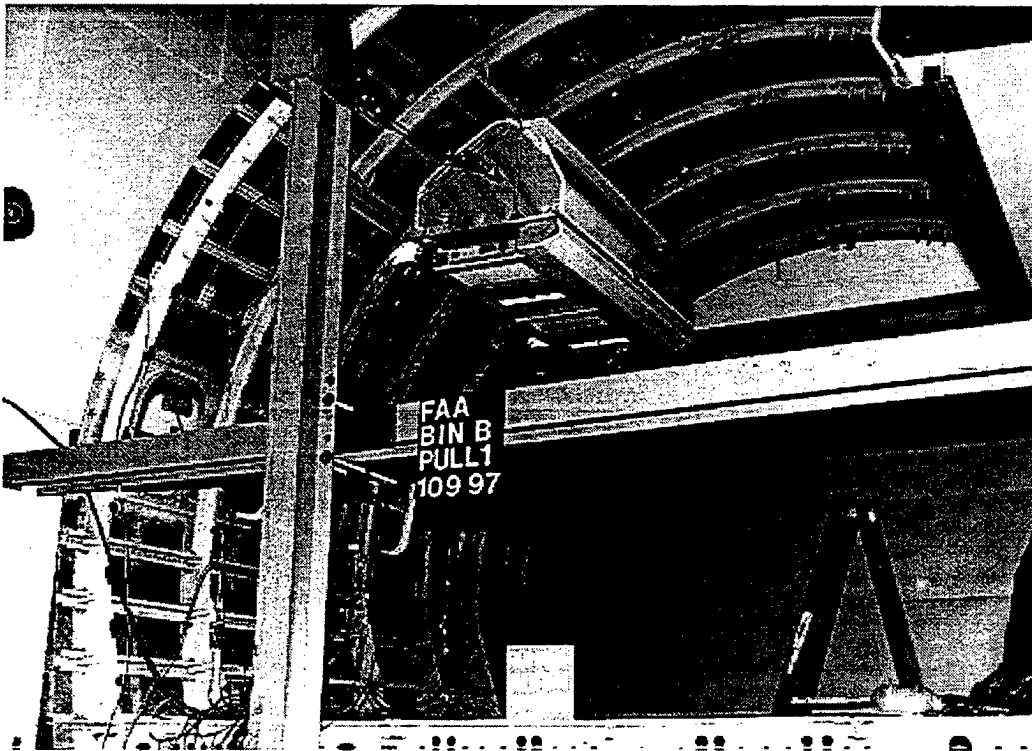


FIGURE C-48. PRETEST BIN B AND TEST FIXTURE FRONT ANGLE OVERALL VIEW

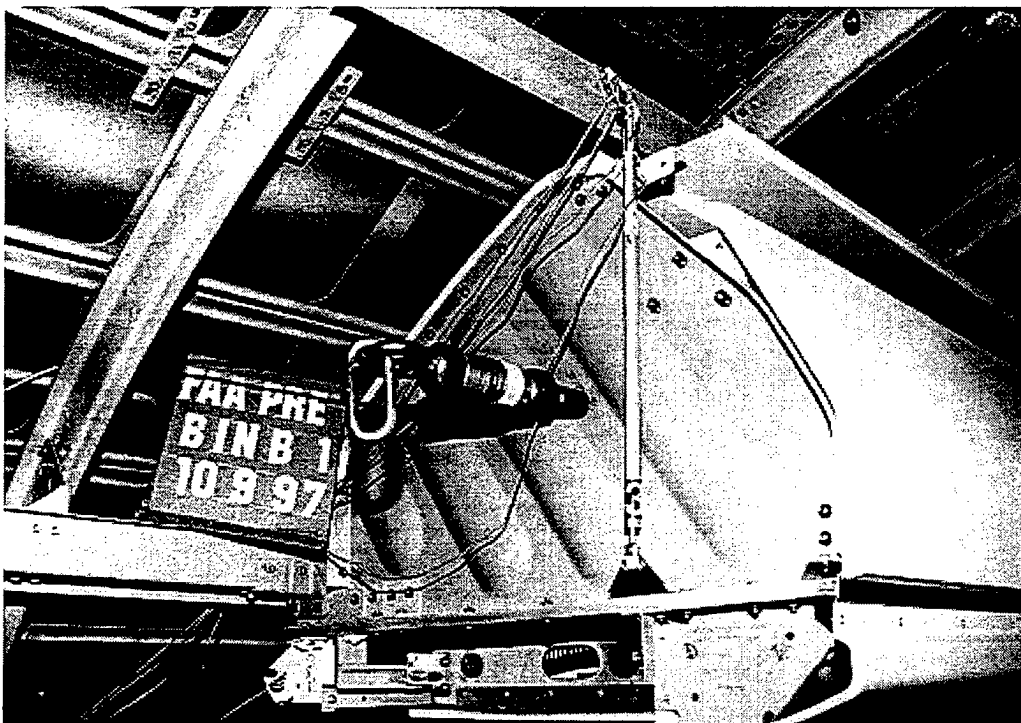


FIGURE C-49. PRETEST BIN B FRONT ANGLE CLOSE VIEW

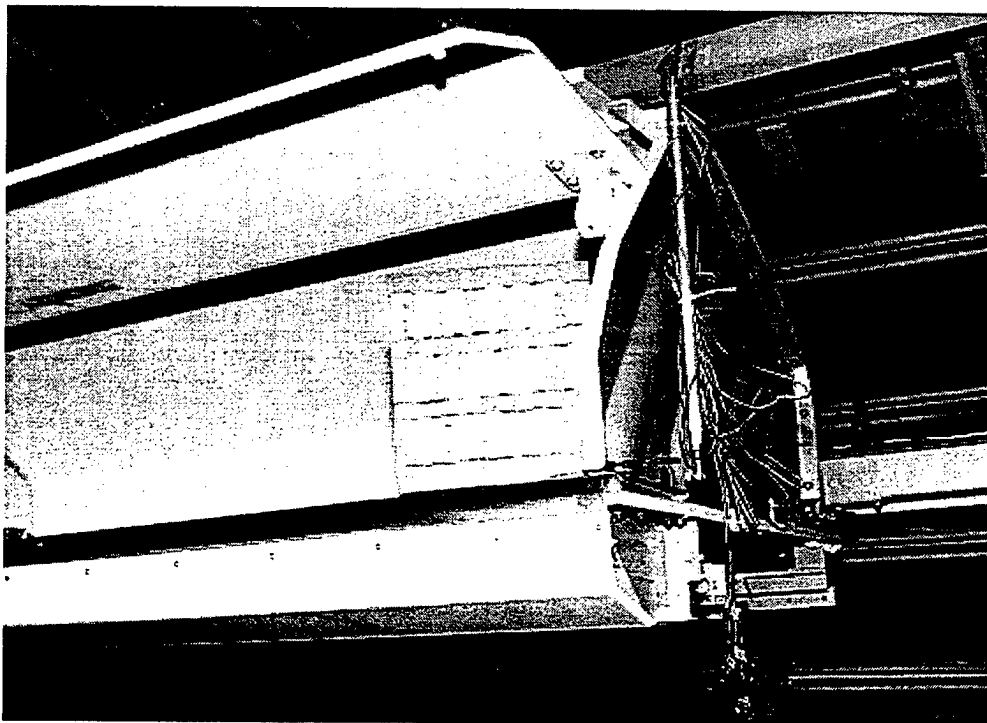


FIGURE C-50. PRETEST BIN B REAR ANGLE VIEW

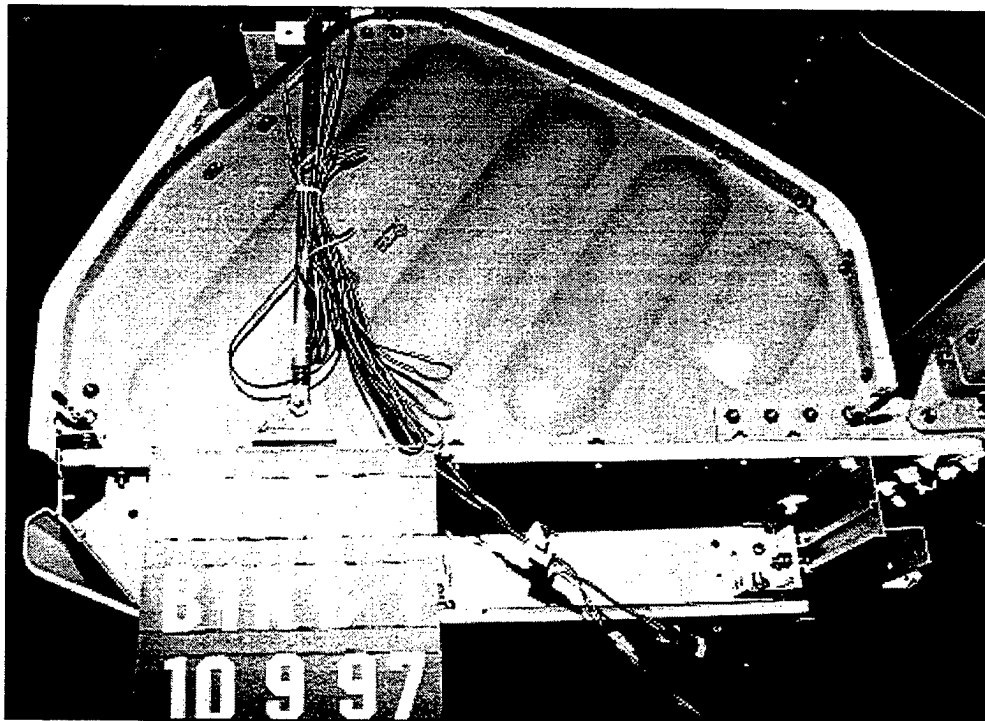


FIGURE C-51. PRETEST BIN B REAR CLOSE VIEW

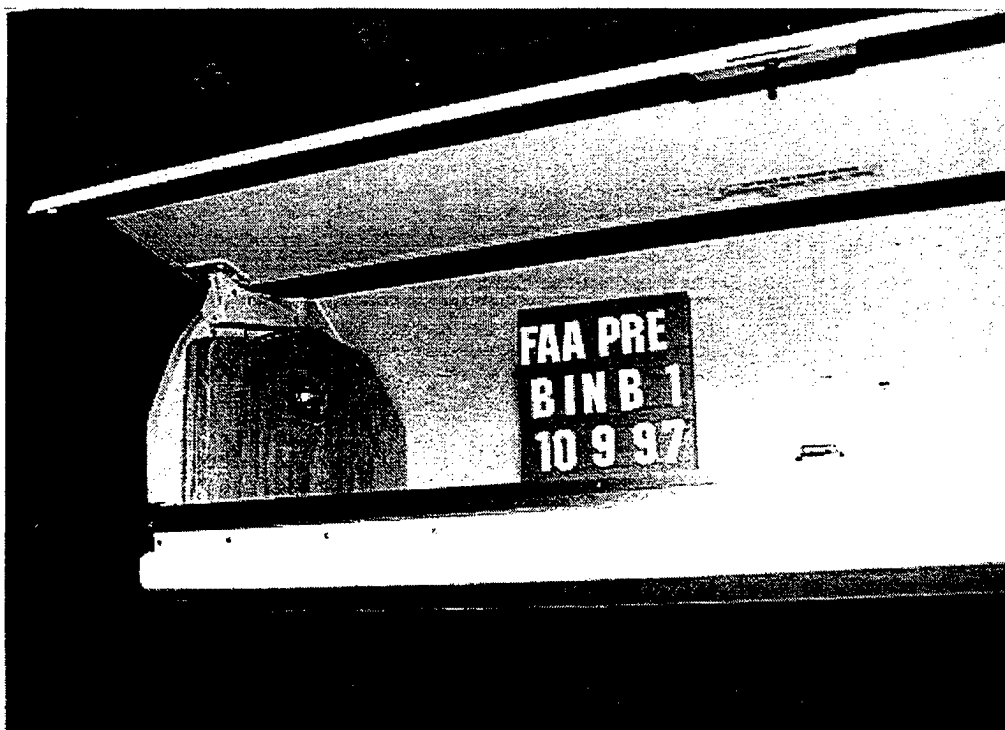


FIGURE C-52. PRETEST BIN B THREADED ROD ATTACHMENT REAR ANGLE VIEW

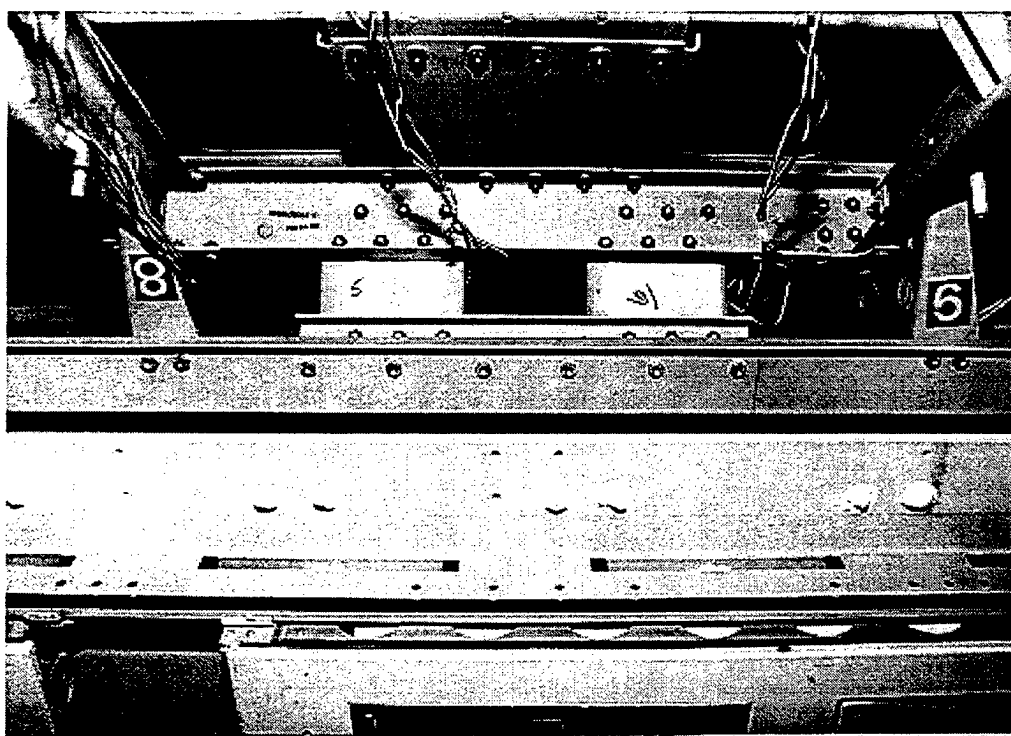


FIGURE C-53. PRE TEST BIN B SUPPORTS 5, 6, 8, AND 9 BOTTOM VIEW

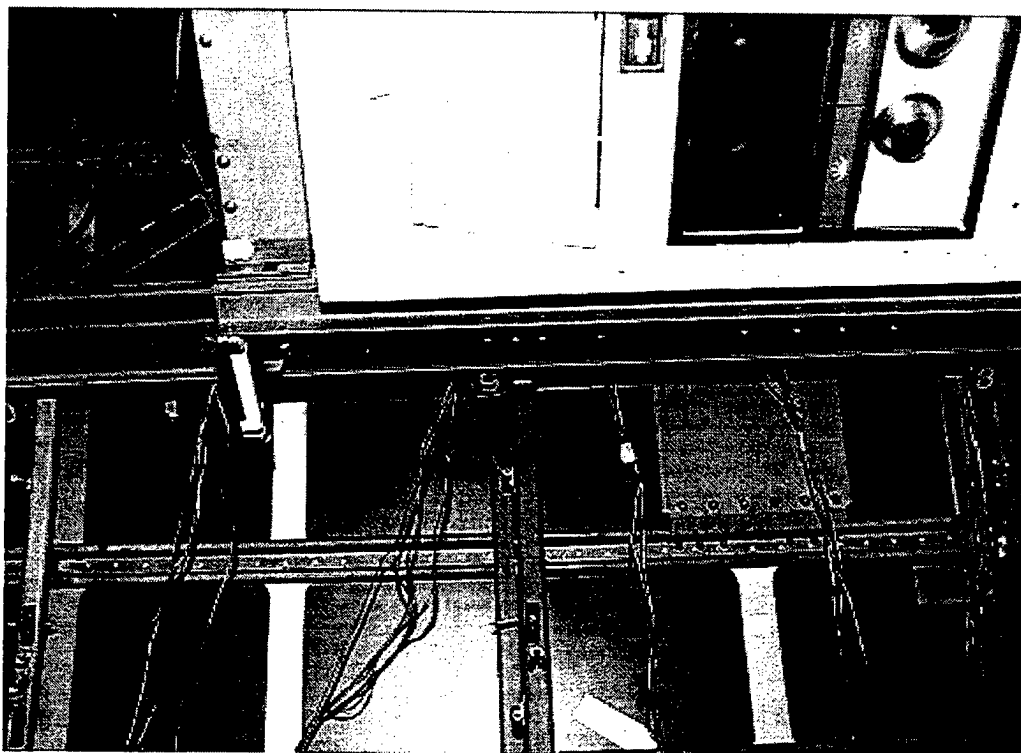


FIGURE C-54. PRETEST BIN B SUPPORTS 8, 9, AND 10 BOTTOM VIEW

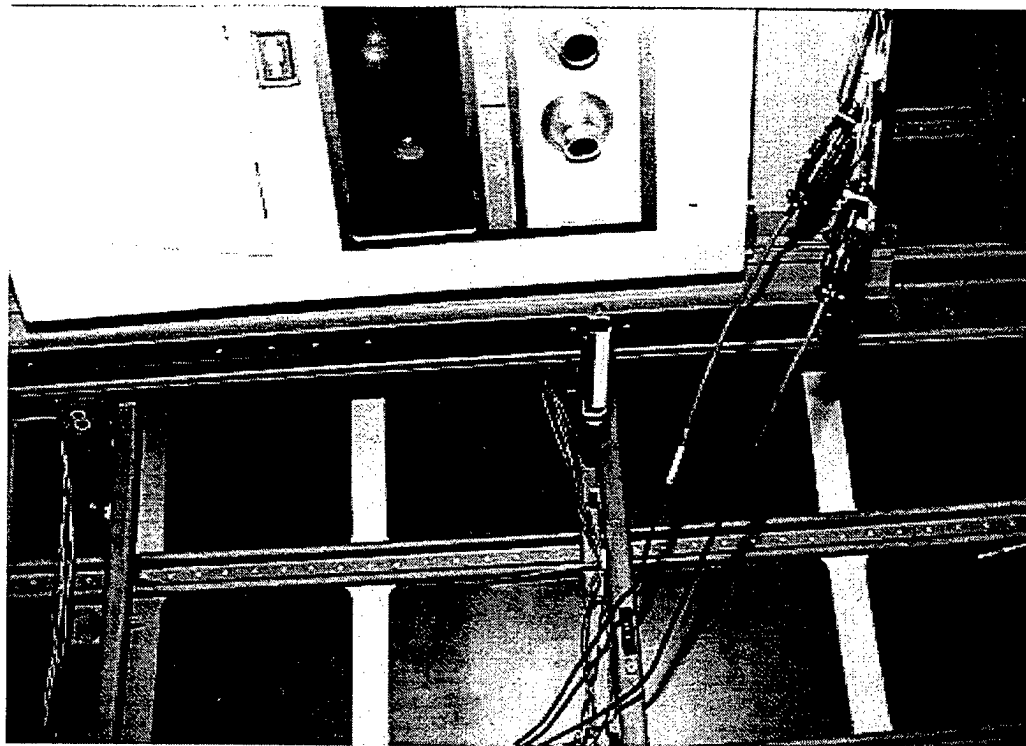


FIGURE C-55. PRETEST BIN B SUPPORTS 7 AND 8 BOTTOM VIEW

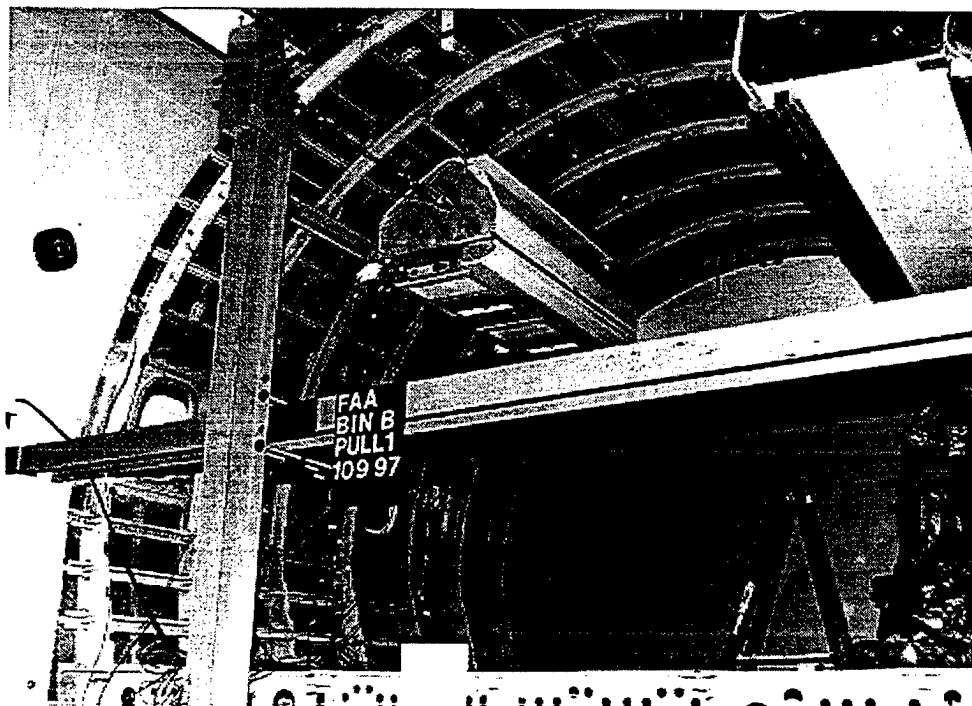


FIGURE C-56. POSTTEST BIN B AND TEST FIXTURE FRONT ANGLE OVERALL VIEW

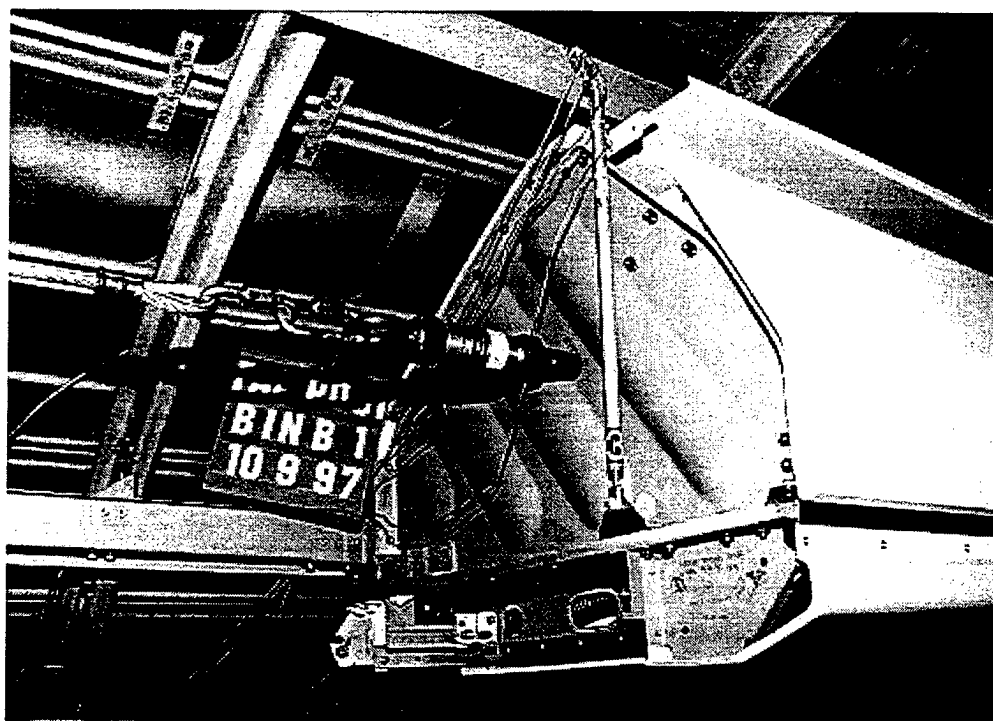


FIGURE C-57. POSTTEST BIN B FRONT ANGLE CLOSE VIEW

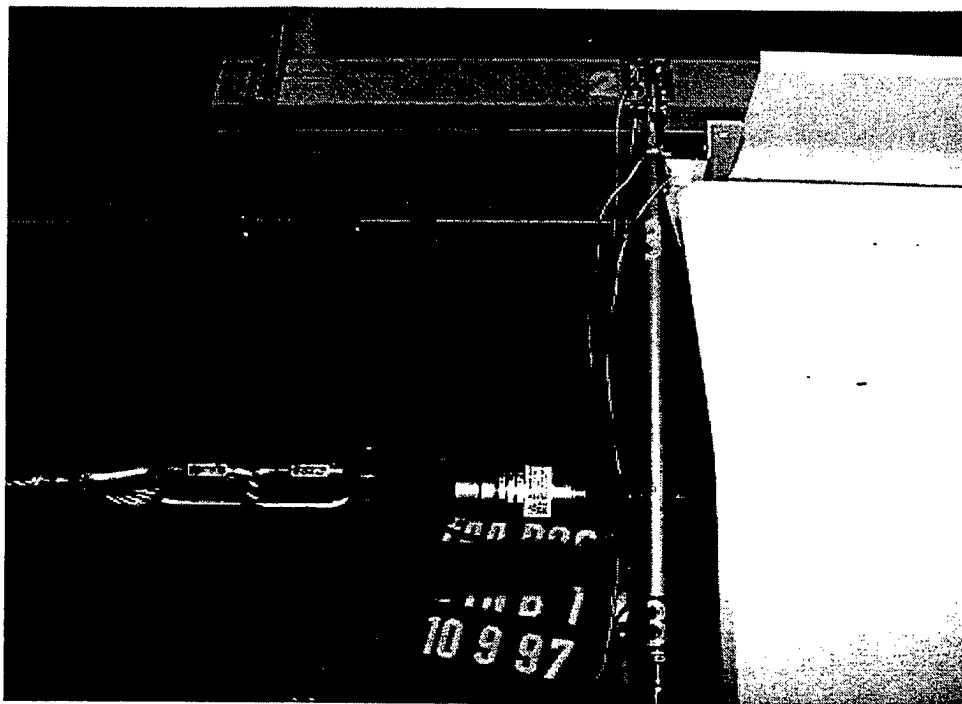


FIGURE C-58. POSTTEST BIN B FORCE TRANSDUCER AND SUPPORT 1
SIDE VIEW



FIGURE C-59. POSTTEST BIN B THREADED ROD ATTACHMENT REAR
ANGLE VIEW

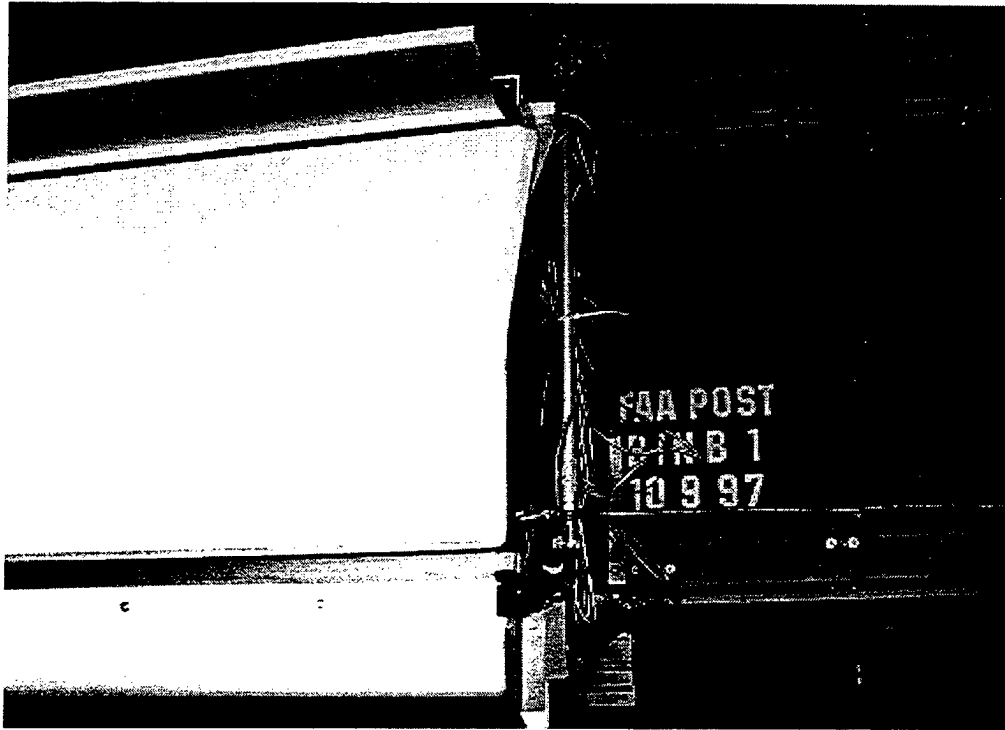


FIGURE C-60. POSTTEST BIN B SUPPORTS 1 AND 4 SIDE VIEW

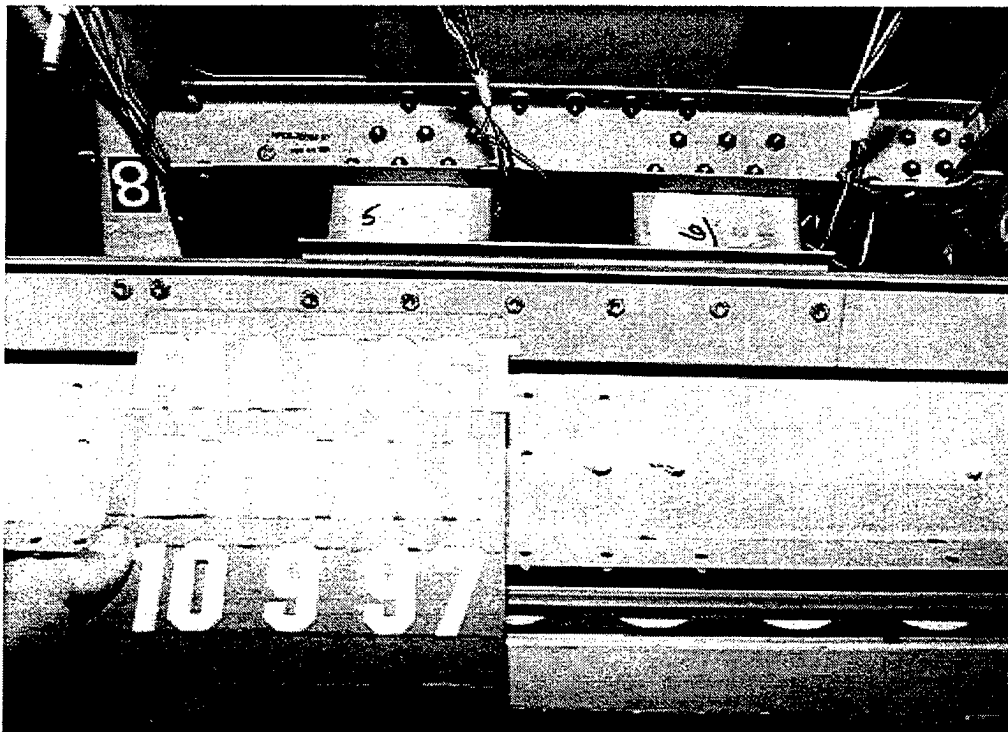


FIGURE C-61. POST TEST BIN B SUPPORTS 5, 6, 8, AND 9 BOTTOM VIEW

OVERHEAD STOWAGE BIN B STATIC CALIBRATION - PULL 2

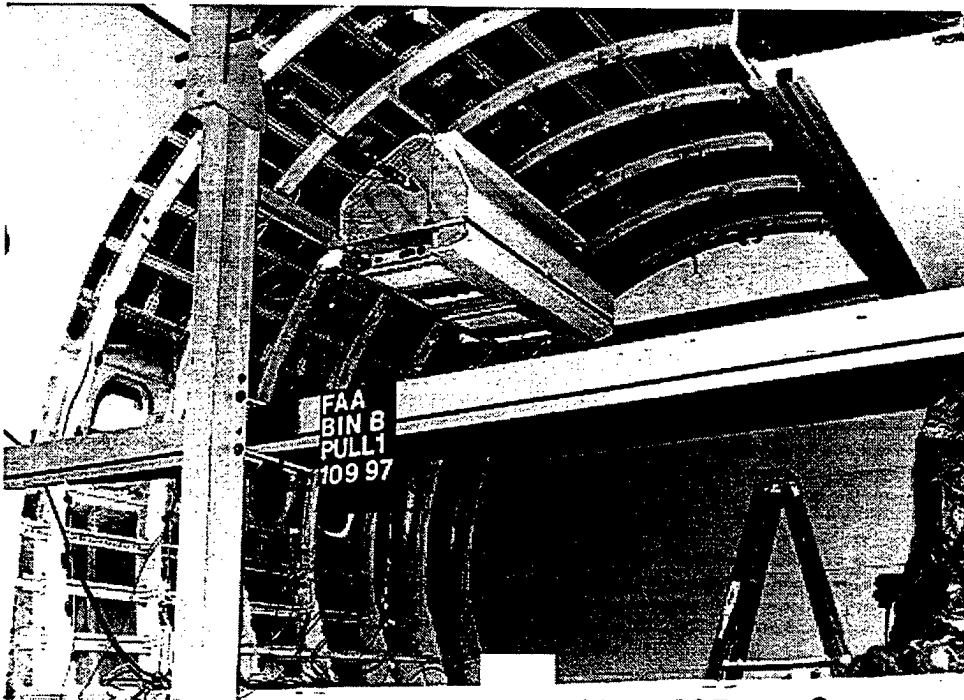


FIGURE C-62. PRETEST BIN B AND TEST FIXTURE FRONT ANGLE OVERALL VIEW

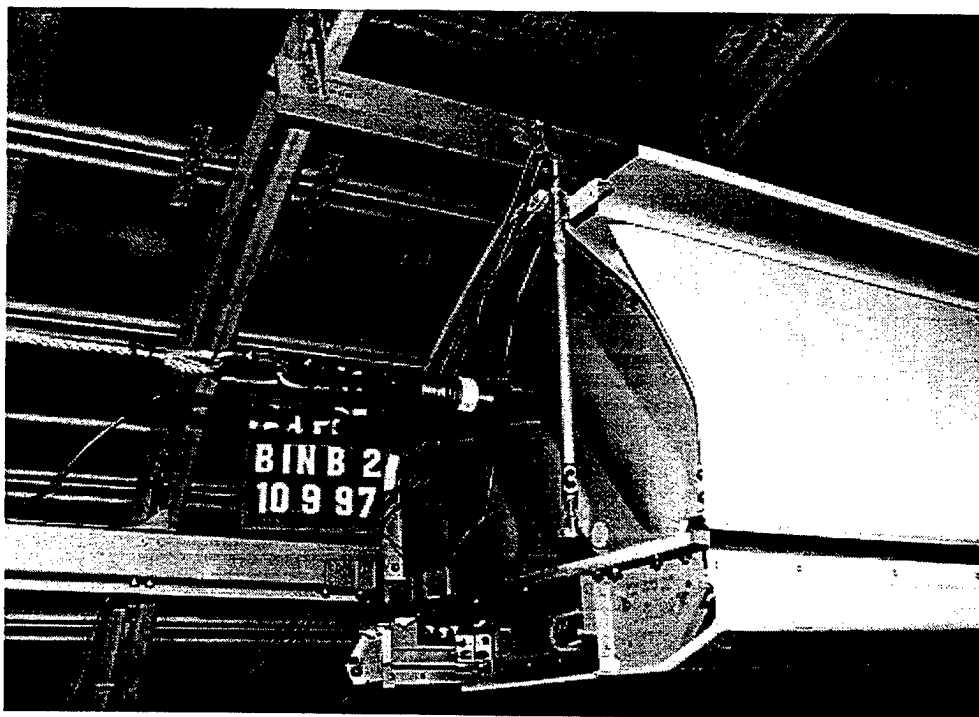


FIGURE C-63. PRETEST BIN B FRONT ANGLE CLOSE VIEW

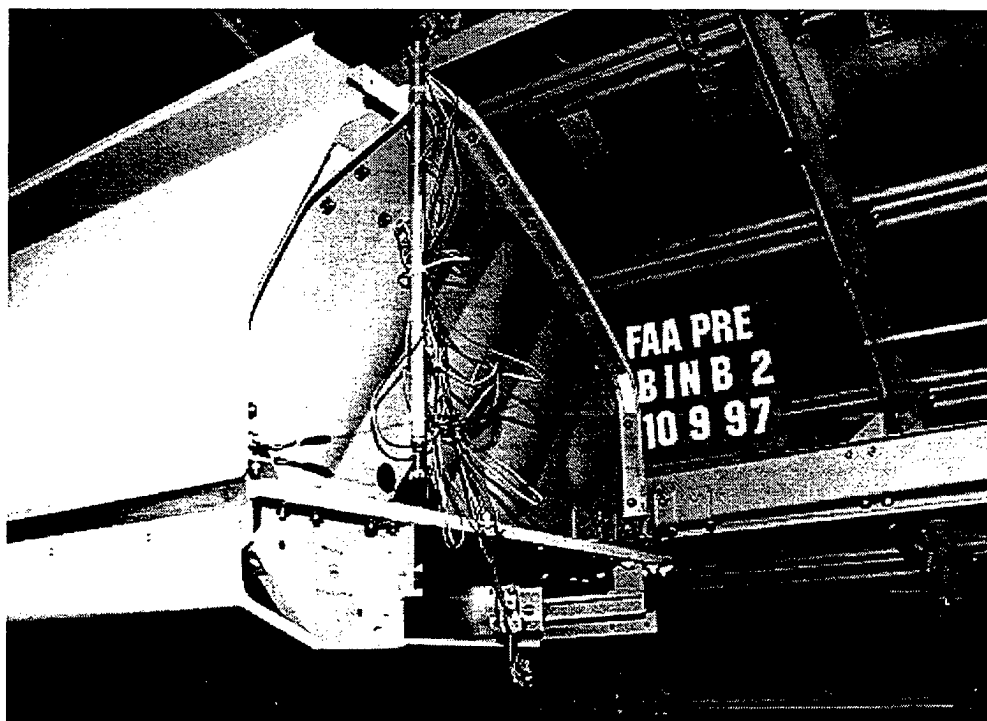


FIGURE C-64. PRETEST BIN B REAR ANGLE CLOSE VIEW



FIGURE C-65. PRETEST BIN B THREADED ROD ATTACHMENT REAR ANGLE VIEW

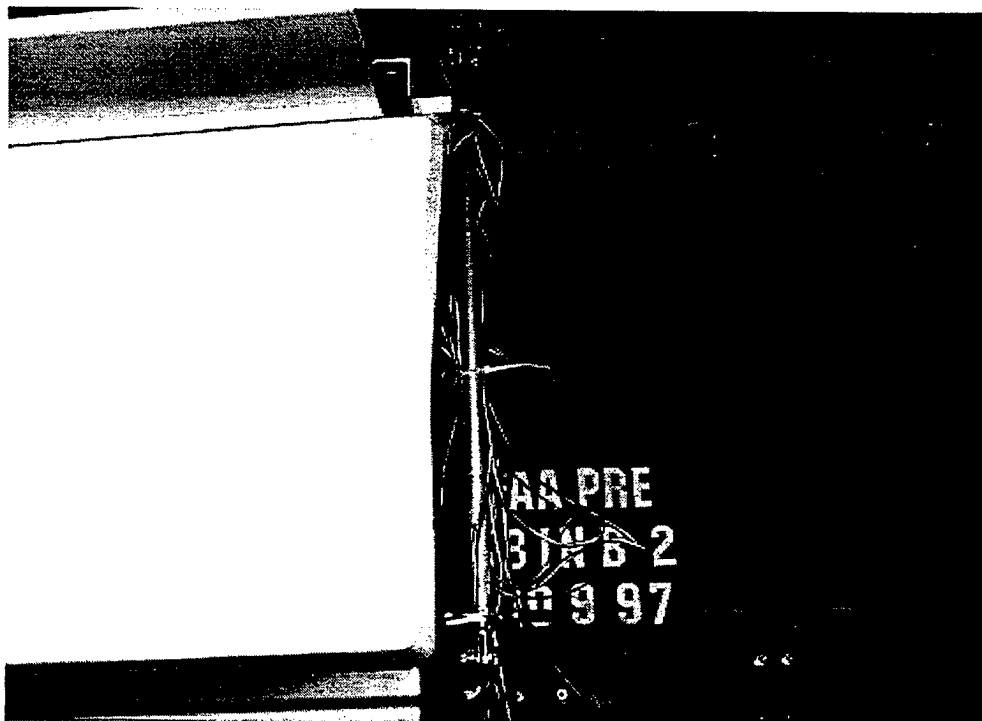


FIGURE C-66. PRETEST BIN B SUPPORTS 1 AND 4 SIDE VIEW

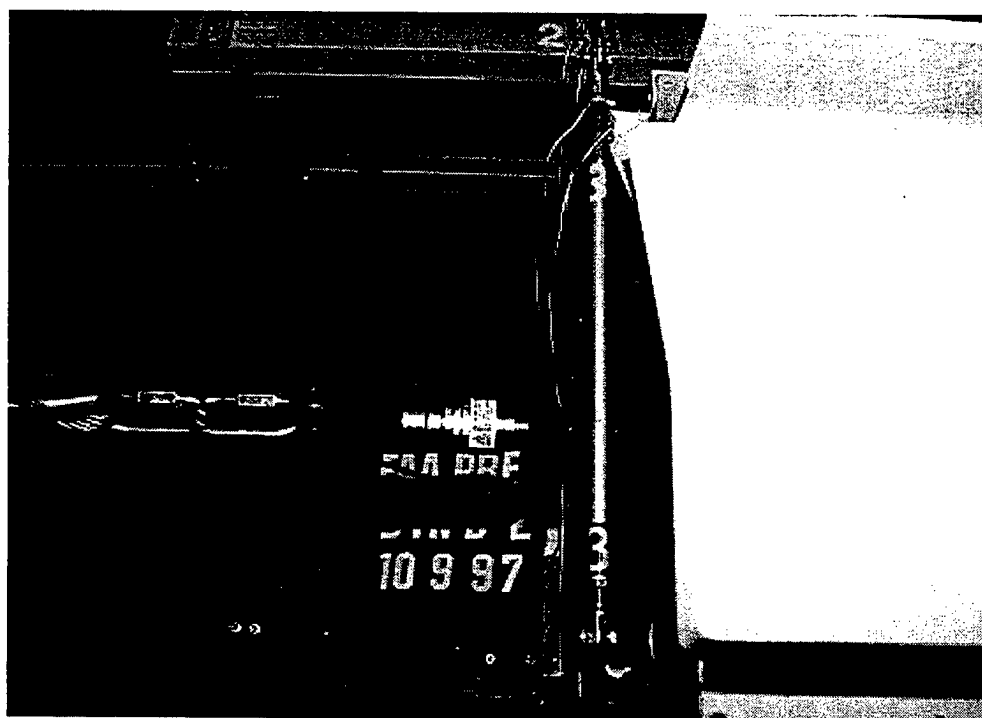


FIGURE C-67. PRETEST BIN B SUPPORTS 2 AND 3 SIDE VIEW



FIGURE C-68. PRE TEST BIN B SUPPORTS 5, 6, 8, AND 9 BOTTOM VIEW

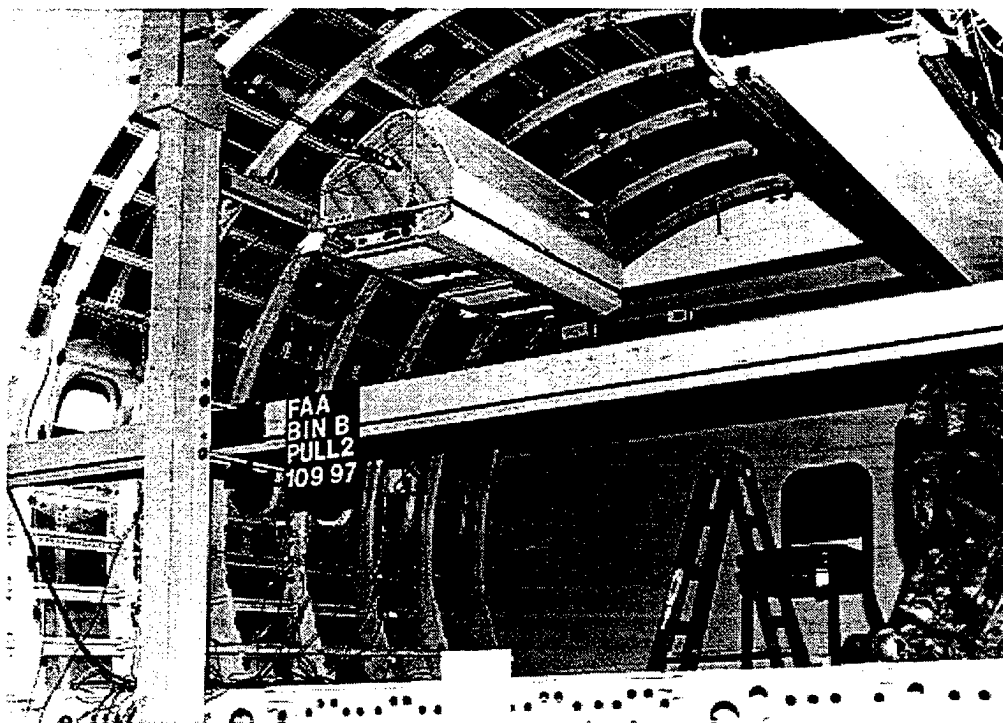


FIGURE C-69. POSTTEST BIN B AND TEST FIXTURE FRONT ANGLE OVERALL VIEW

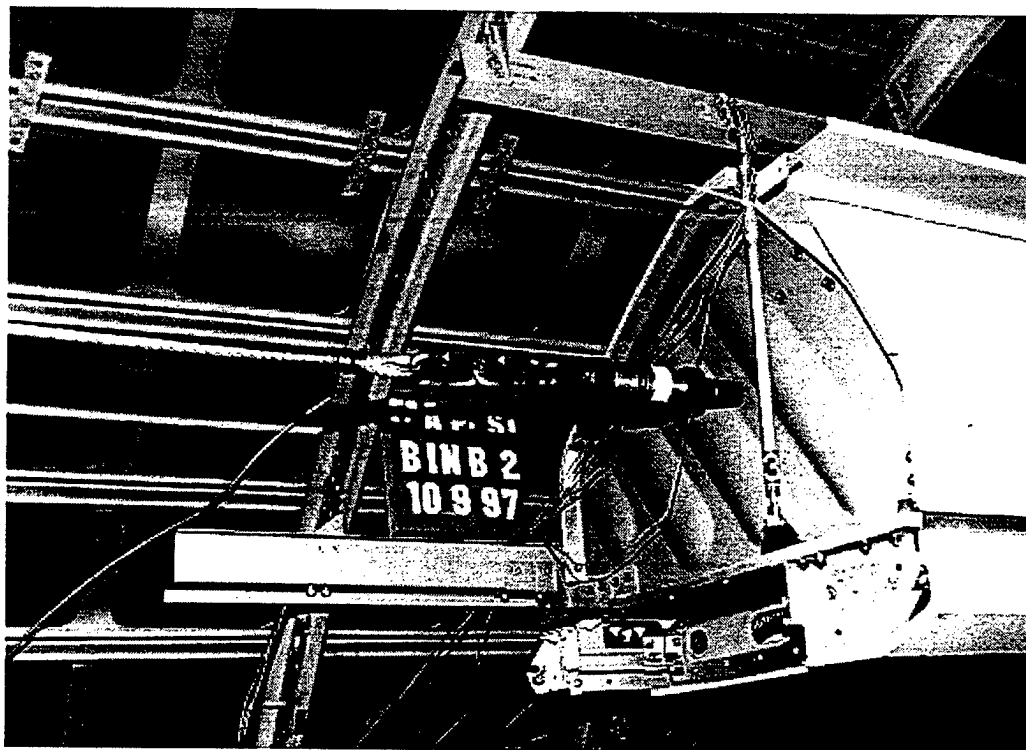


FIGURE C-70. POSTTEST BIN B FRONT ANGLE CLOSE VIEW

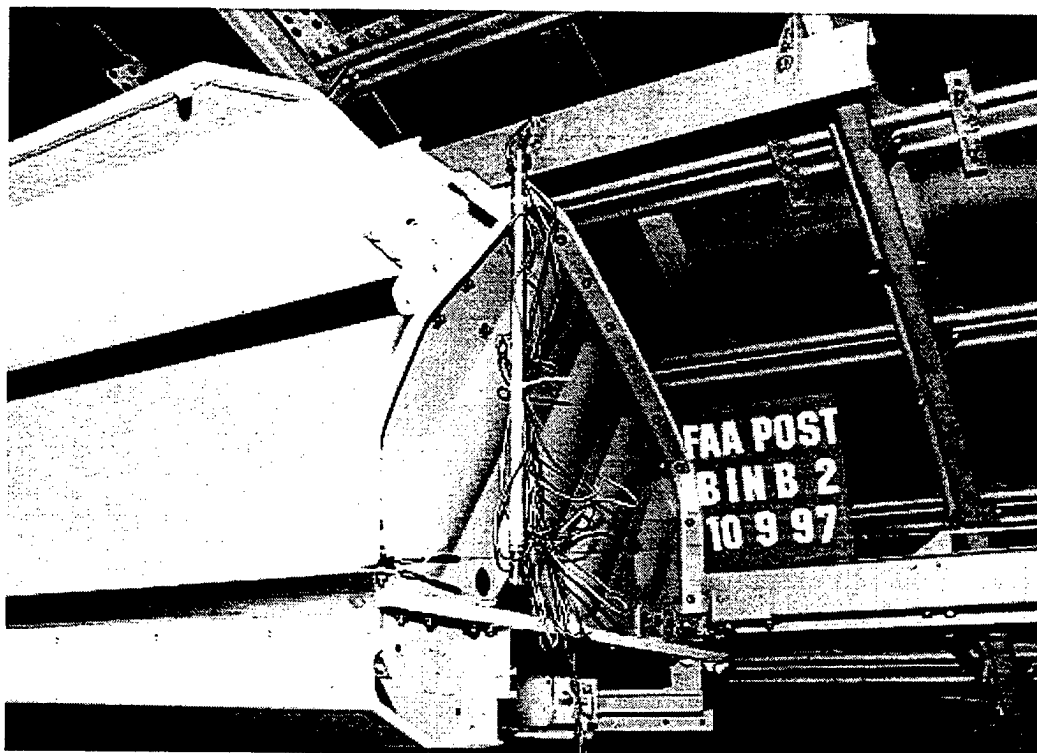


FIGURE C-71. POSTTEST BIN B REAR ANGLE CLOSE VIEW

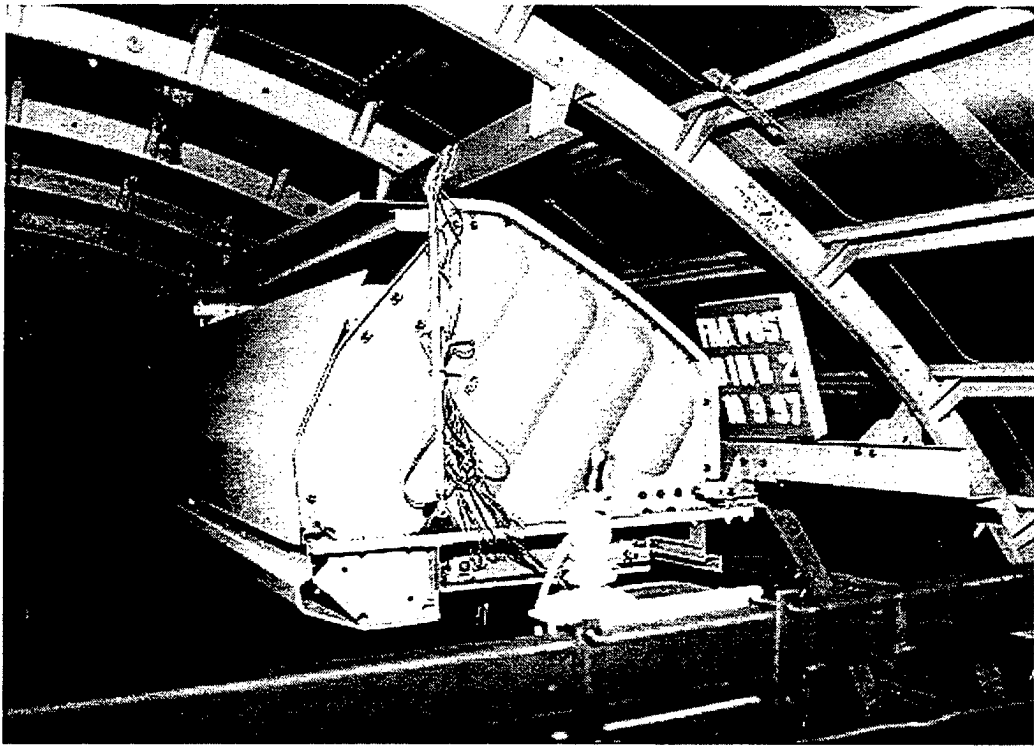


FIGURE C-72. POSTTEST BIN B REAR VIEW

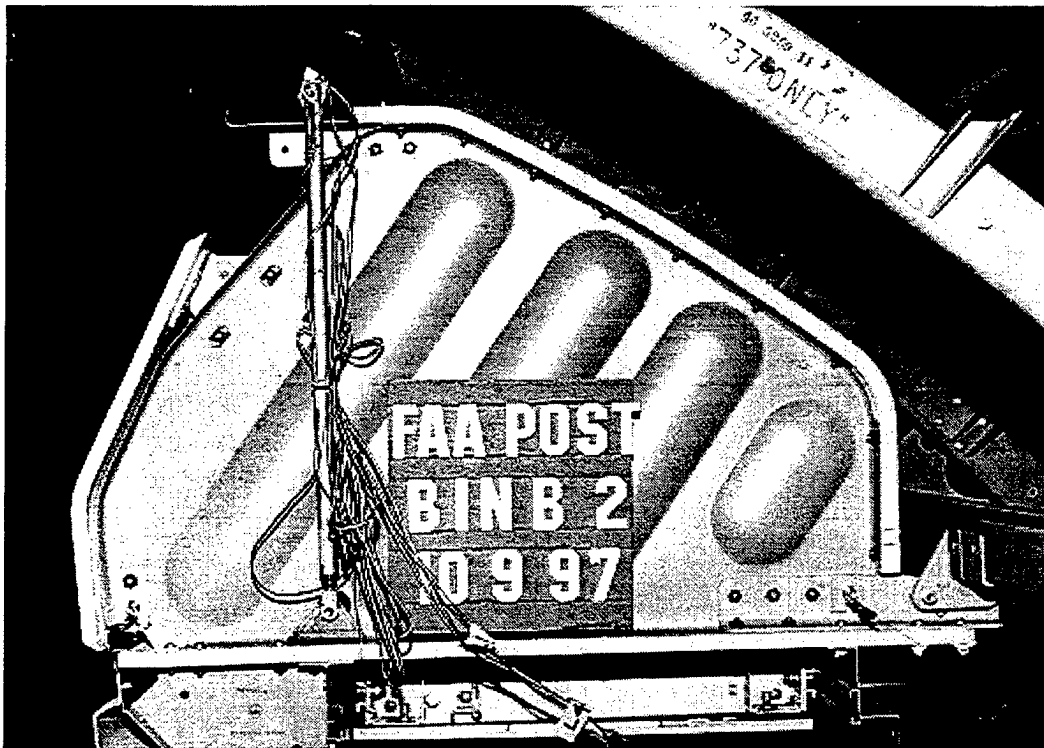


FIGURE C-73. POSTTEST BIN B REAR CLOSE VIEW

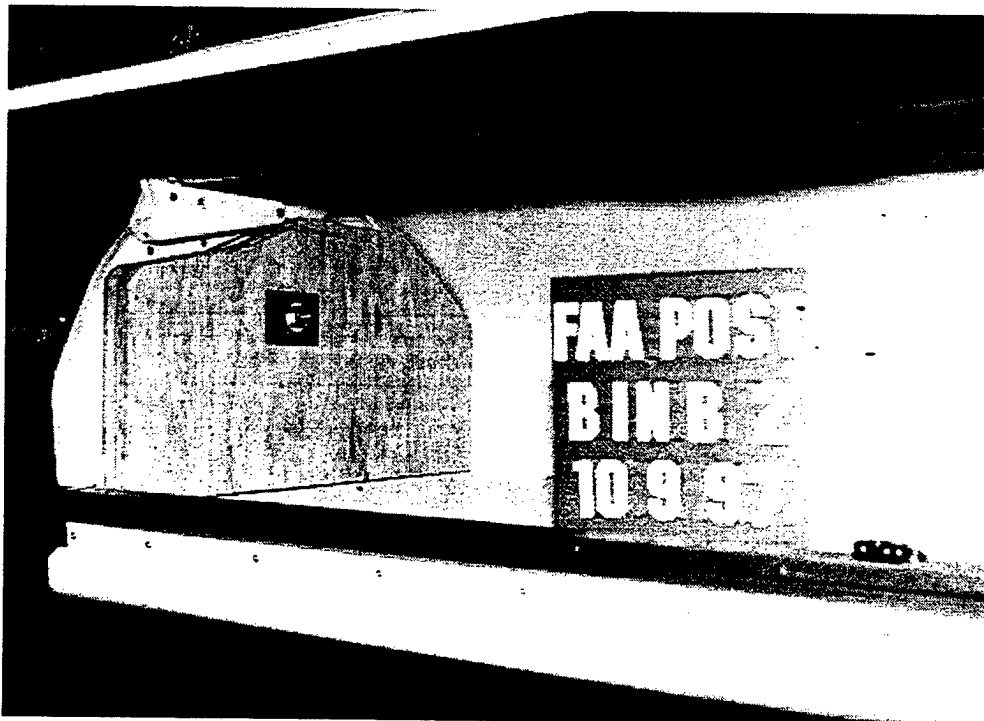


FIGURE C-74. POSTTEST BIN B THREADED ROD ATTACHMENT REAR ANGLE VIEW

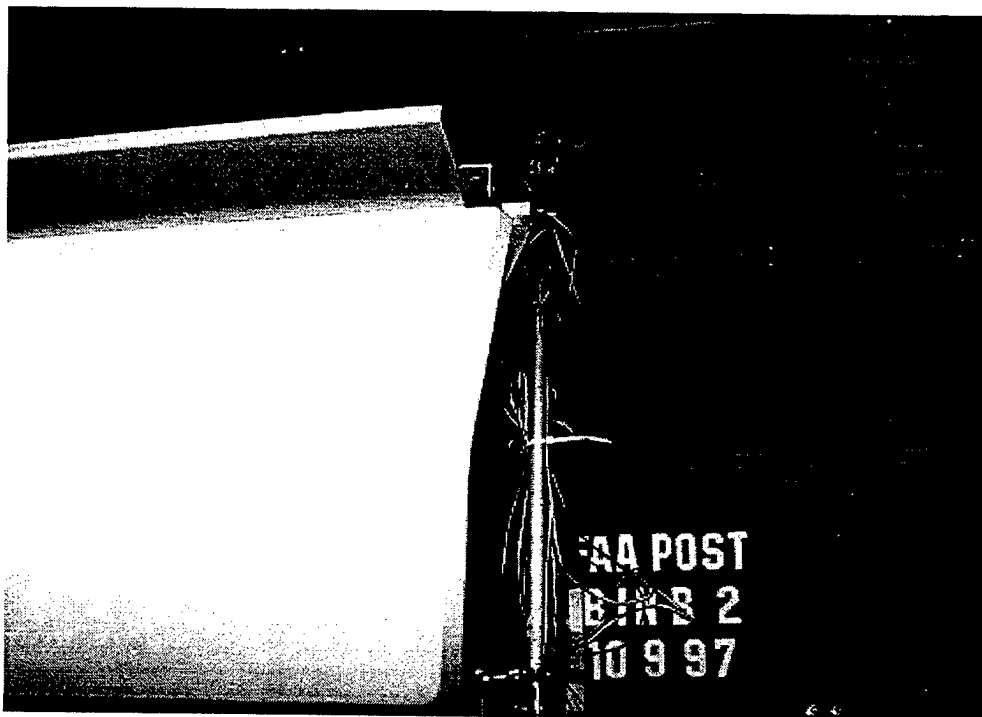


FIGURE C-75. POSTTEST BIN B SUPPORTS 1 AND 4 SIDE VIEW

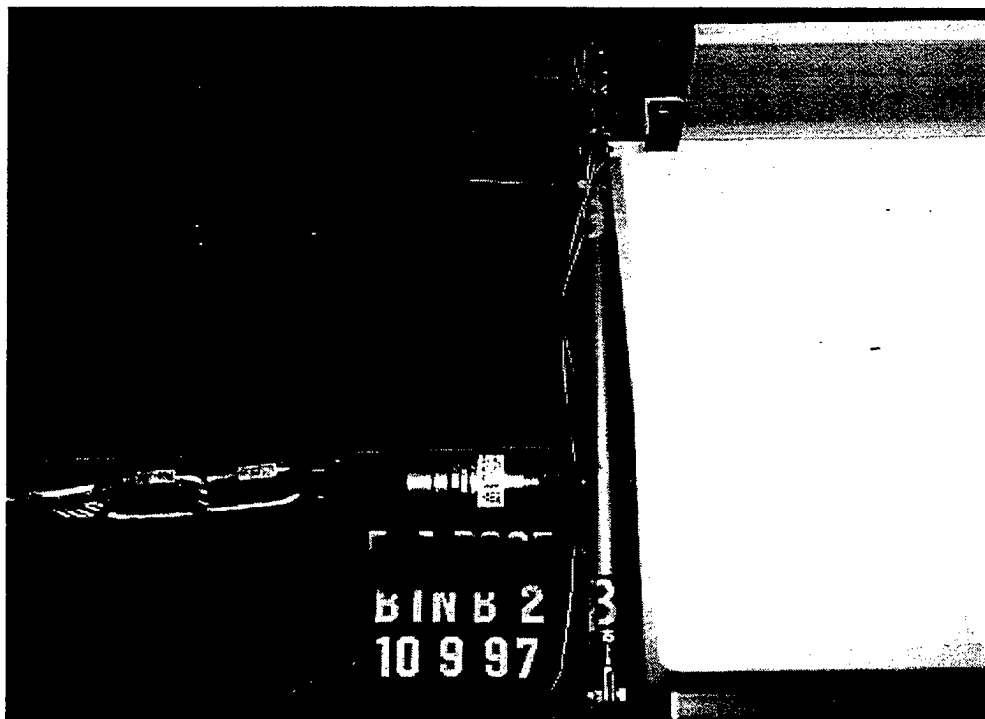


FIGURE C-76. POSTTEST BIN B SUPPORTS 2 AND 3 SIDE VIEW

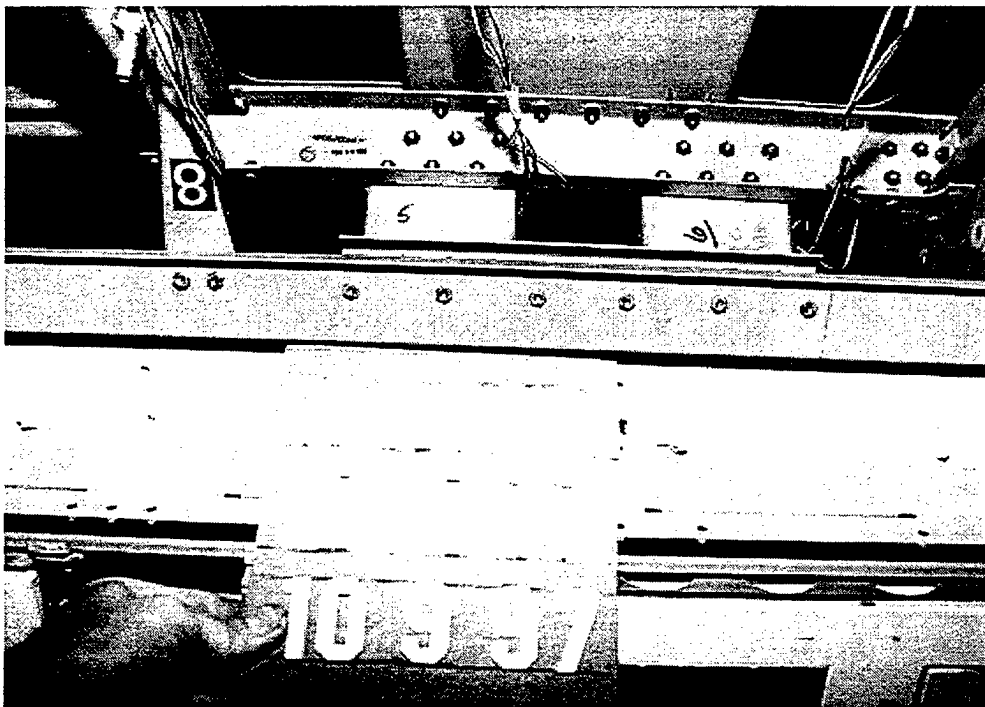


FIGURE C-77. POST TEST BIN B SUPPORTS 5, 6, 8, AND 9 BOTTOM VIEW



FIGURE C-78. POSTTEST BIN B SUPPORTS 7 AND 11 BOTTOM VIEW

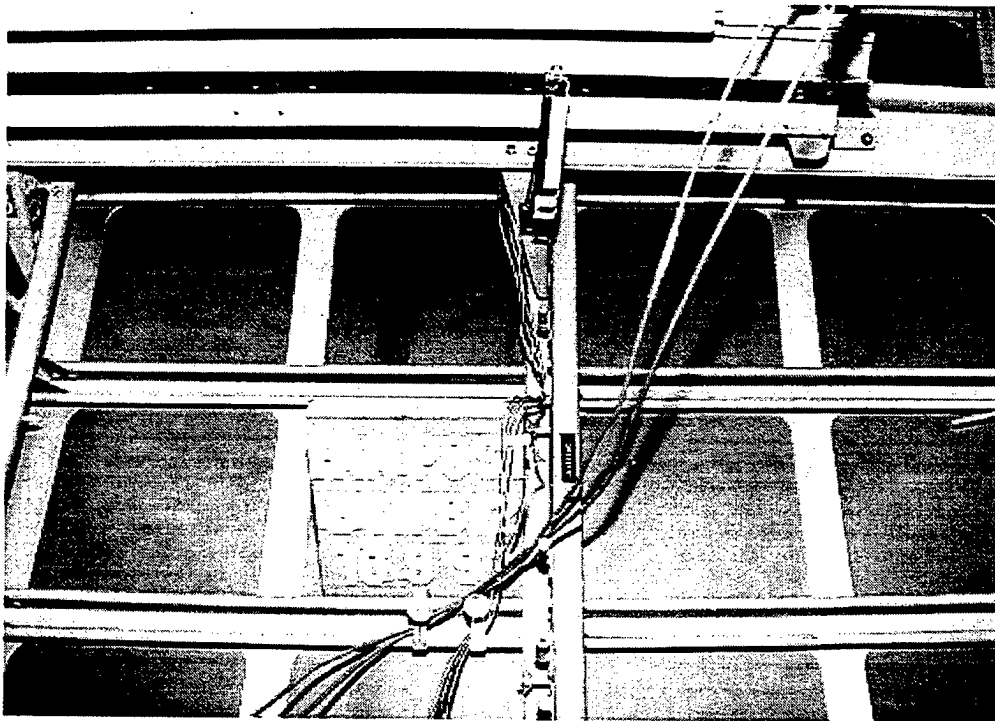


FIGURE C-79. POSTTEST BIN B SUPPORTS 7 AND 8 BOTTOM VIEW

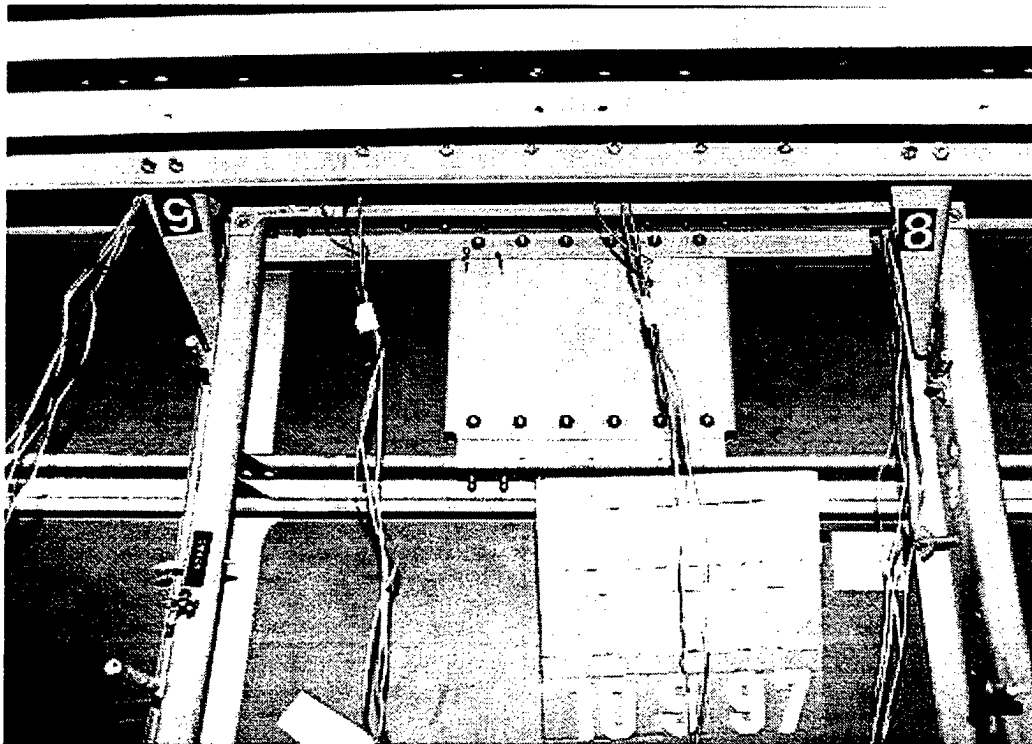


FIGURE C-80. POSTTEST BIN B SUPPORTS 8 AND 9 BOTTOM VIEW



FIGURE C-81. POSTTEST BIN B SUPPORTS 9 AND 10 BOTTOM VIEW

TABLE C-1. ACCELEROMETER INFORMATION

Channel Mnemonic	Accel. Mfr.	Model Number	Serial Number	Sensitivity Mv/G	Cal. Date
SLDXG	ENDEVCO	7232C-750	CB51	.1997	8/19/97
F420XG	ENDEVCO	7264T-2000	J20036	.2706	10/13/97
F420YG	ENDEVCO	7264T-2000	J19728	.2476	11/7/97
F420ZG	ENDEVCO	7264T-2000	J19979	.3054	10/13/97
F500XG	ENDEVCO	7264T-2000	J15388	.2844	10/15/97
F500YG	ENDEVCO	7264T-2000	J19982	.2765	8/15/97
F500ZG	ENDEVCO	7264T-2000	J20009	.3038	8/15/97
T420XG	ENDEVCO	7264T-2000	J22167	.2783	11/13/97
T420YG	ENDEVCO	7264T-2000	J19116	.2303	11/7/97
T420ZG	ENDEVCO	7264T-2000	J20287	.2461	8/15/97
T500XG	ENDEVCO	7264T-2000	J22168	.2757	11/13/97
T500YG	ENDEVCO	7264T-2000	J22170	.2383	11/13/97
T500ZG	ENDEVCO	7264T-2000	J20440	.2612	11/13/97
L440XG	ENDEVCO	7264T-2000	J18844	.2766	11/13/97
L440YG	ENDEVCO	7264T-2000	J19309	.2256	9/11/97
L440ZG	ENDEVCO	7264T-2000	J22166	.2646	11/13/97
L480XG	ENDEVCO	7264T-2000	J20605	.2389	11/13/97
L480YG	ENDEVCO	7264T-2000	J20422	.2561	11/13/97
L480ZG	ENDEVCO	7264T-2000	J22080	.2334	11/13/97
R440XG	ENDEVCO	7264T-2000	J19951	.2637	8/15/97
R440YG	ENDEVCO	7264T-2000	AC721	.3290	6/12/97
R440ZG	ENDEVCO	7264T-2000	AHRYO	.2158	10/24/97
R480XG	ENDEVCO	7264T-2000	J19942	.2710	8/15/97
R480YG	ENDEVCO	7264T-2000	J15369	.3542	10/28/97
R480ZG	ENDEVCO	7264T-2000	J19697	.2265	6/16/97
BAFXG	ENDEVCO	7264T-2000	J22078	.2642	11/13/97
BAFYG	ENDEVCO	7264T-2000	J19976	.2859	8/15/97
BAFZG	ENDEVCO	7264T-2000	J20353	.2367	11/13/97
BACXG	ENDEVCO	7264T-2000	J20284	.3456	9/11/97
BACYG	ENDEVCO	7264T-2000	AGR85	.2458	9/16/97
BACZG	ENDEVCO	7264T-2000	J22093	.2836	11/13/97
BAAXG	ENDEVCO	7264T-2000	J22079	.2436	11/13/97

TABLE C-1. ACCELEROMETER INFORMATION (Continued)

Channel Mnemonic	Accel. Mfr.	Model Number	Serial Number	Sensitivity Mv/G	Cal. Date
BAAYG	ENDEVCO	7264T-2000	J22094	.2464	9/9/97
BAAZG	ENDEVCO	7264T-2000	J20348	.2359	10/14/97
BBFXG	ENDEVCO	7264T-2000	A24FJ	.2611	10/14/97
BBFYG	ENDEVCO	7264T-2000	J19498	.2445	10/13/97
BBFZG	ENDEVCO	7264T-2000	J19557	.2405	10/28/97
BBCXG	ENDEVCO	7264T-2000	J19943	.2426	8/15/97
BBCYG	ENDEVCO	7264T-2000	10288	.2321	9/11/97
BBAXG	ENDEVCO	7264T-2000	J20185	.2652	10/13/97
BBAYG	ENDEVCO	7264T-2000	J19629	.2543	8/15/97
BBAZG	ENDEVCO	7264T-2000	J14337	.2887	8/20/97
FTLXG	ENDEVCO	7264T-2000	J20363	.2617	11/13/97
FTLYG	ENDEVCO	7264T-2000	J22095	.2370	11/13/97
FTLZG	ENDEVCO	7264T-2000	ACB93	.2447	11/13/97
FTRXG	ENDEVCO	7264T-2000	J20218	.2502	11/13/97
FTRYG	ENDEVCO	7264T-2000	J22076	.2719	11/13/97
FTRZG	ENDEVCO	7264T-2000	J22210	.2769	11/13/97
FTTXG	ENDEVCO	7264T-2000	J22049	.2626	11/13/97

TABLE C-2. POTENTIOMETER INFORMATION

Channel Mnemonic	Pot. Mfr.	Model Number	Serial Number	Sensitivity Mv/V/In.	Cal. Date
AACIXD	CELESCO	PT101	A23305	16.28	7/22/97
AACOXD	CELESCO	PT101	A51807	18.95	7/22/97
RXDFAC	BOURNS	3 INCH	S12	333.0	7/22/97
BIXD	CELESCO	PT101	A51807	18.95	7/22/97
BOXD	CELESCO	PT101	A23305	16.28	7/22/97
BINAXD	CELESCO	PT101	A23305	16.28	7/22/97
BINBXD	CELESCO	PT101	A51807	18.95	7/22/97
FTXD	CELESCO	PT101	A35691	23.4	11/18/97

TABLE C-3. LOAD CELL INFORMATION

Channel Mnemonic	Load Cell Manufacturer	Model Number	Serial Number	Sensitivity Mv/V/Lb	Cal. Date
OBBPXF	Key Reference Load Cell	1315-101-06	166a	.00117/.00117	3/3/97-/ 9/26/97
AL75XF	DENTON	FAA/C&D	75	.001385	2/26/97
AL75YF	DENTON	FAA/C&D	75	.002389	2/26/97
AL75ZF	DENTON	FAA/C&D	75	-.001024	2/26/97
AL76XF	DENTON	FAA/C&D	76	.001342	2/26/97
AL76YF	DENTON	FAA/C&D	76	.002388	2/26/97
AL76ZF	DENTON	FAA/C&D	76	-.001022	2/26/97
AL78XF	DENTON	FAA/C&D	78	.001353	2/27/97
AL78YF	DENTON	FAA/C&D	78	.002381	2/27/97
AL78ZF	DENTON	FAA/C&D	78	-.001058	2/27/97
AU78XA	DENTON	FAA/A&B	78	.003529	2/25/97
AU78XB	DENTON	FAA/A&B	78	.002817	2/25/97
AU78ZC	M&M	NA	NA	NA	NA
AU78ZD	M&M	NA	NA	NA	NA
AU76XA	DENTON	FAA/A&B	76	.003584	2/25/97
AU76XB	DENTON	FAA/A&B	76	.002829	2/25/97
AU76ZC	M&M	NA	NA	NA	NA
AU76ZD	M&M	NA	NA	NA	NA
AU75XA	DENTON	FAA/A&B	75	.003546	2/25/97
AU75XB	DENTON	FAA/A&B	75	.002796	2/25/97
AU75ZC	M&M	NA	NA	NA	NA
AU75XD	M&M	NA	NA	NA	NA
B1ZF	FAA	HPD9700667	SUPPORT 1	.0012	9/15/97
B2ZF	FAA	HPD9700667	SUPPORT 2	.0013	9/15/97
B3ZF	FAA	HPD91103243	SUPPORT 3	.0009	9/15/97
B4ZF	FAA	HPD91103243	SUPPORT 4	.0008	9/15/97
B5XF	FAA	HPD570060159	SUPPORT 5	-.0013	9/15/97
B6XF	FAA	HPD570060159	SUPPORT 6	-.0014	9/15/97
B7YF1	FAA	HPD57004146	SUPPORT 7-1	.0015	NA
B7YF2	FAA	HPD57004146	SUPPORT 7-2	.0018	NA
B8YF1	FAA	HPD57004146	SUPPORT 8-1	.0014	NA
B8YF2	FAA	HPD57004146	SUPPORT 8-2	.0013	NA
B9YF1	FAA	HPD57004146	SUPPORT 9-1	-.0014	NA
B9YF2	FAA	HPD57004146	SUPPORT 9-2	-.0021	NA
B10YF1	FAA	HPD57004146	SUPPORT 10-1	-.0011	NA
B10YF2	FAA	HPD57004146	SUPPORT 10-2	-.0017	NA
B11YF1	FAA	HPD57004146	SUPPORT 11-1	.0014	NA
B11YF2	FAA	HPD57004146	SUPPORT 11-2	.0020	NA

STATIC CALIBRATION TESTS

A series of static overhead stowage bin pull tests were conducted on July 22, 1997, and October 9, 1997. The static test results were used to verify the expected loads on the instrumented bin attachment supports. Four tests were conducted as follows:

Bin A - Cal 1 was pulled on the forward face of the 120-inch bin at a maximum load of 1800 pounds. Data were recorded every 200 pounds up to 1800 pounds and every 400 pounds back to 0 pounds pull force. Data were recorded a total of fifteen points. High-density foam and plywood sections were placed inside of the forward panel to distribute the loading. No damage to the overhead stowage bin or attachment supports was observed.

Bin A - Cal 2 was pulled the same method as Bin A - Cal 1. No damage to the overhead stowage bin or attachment supports was observed. Both Bin A static pull tests were conducted on July 22, 1997.

Bin B - Cal 1 was pulled on the forward face of the 60-inch bin at a maximum load of 1000 pounds. Data were recorded every 200 pounds up to 1000 pounds and every 200 pounds back to 0 pounds pull force. Data were recorded at a total of eleven points. Plywood sections were placed inside of the forward panel to distribute the loading. No damage to the overhead stowage bin or attachment supports was observed.

Bin B - Cal 2 was pulled the same method as Bin B - Cal 1. No damage to the overhead stowage bin or attachment supports was observed. Both Bin B static pull tests were conducted on October 9, 1997.

INSTRUMENTATION

Bin A Cal - 1 and Cal - 2 had a total of twenty-eight channels of data recorded for each test. Instrumentation for both tests had one load cell, OBAPXF, to measure the pull force two string type potentiometers to measure the forward movement of the bin, and one linear potentiometer to measure the relative movement between the bin sections installed. In addition, each bin attachment support was instrumented with strain gages.

Bin B Cal - 1 and Cal - 2 had a total of nineteen channels of data recorded for each test. Instrumentation for both tests had one load cell, OBAPXF, to measure the pull force and two string type potentiometers to measure the forward movement of the bin. In addition, each bin attachment support was instrumented with strain gages.

RESULTS

Table C-3 contains the results of the four calibration tests. Following the table of data are figures of the calibration setup and tests.

TABLE C-4. OVERHEAD STOWAGE BIN CALIBRATION TEST RESULTS [TEST BIN A - CAL 1]

Mnemonic	Nominal Pull Force (lbs.)															Force in Pounds / *Inch / **Millivolt		
	0	200	400	600	800	1000	1200	1400	1600	1800	1400	1000	600	200	0			
OBAPXF	0.00	197.6	395.2	590.6	786.8	982.1	1177.4	1370.7	1568.4	1762.2	1369.9	984.1	591.5	200.1	6.8			
AL75XF	0.00	-39.63	-67.29	-86.56	-102.24	-111.84	-124.19	-151.14	-187.78	-227.27	-156.65	-89.45	-35.94	5.70	31.5			
AL75YF	0.00	15.03	29.02	43.46	57.38	70.9	86.4	98.56	112.57	127.59	106.43	74.39	43.97	12.28	-2.73			
AL75ZF	0.00	5.86	14.14	20.79	26.95	34.54	39.25	42.14	45.09	48.55	48.21	40.76	26.02	11.47	4.03			
AL76XF	0.00	-28.26	-71.38	-120.31	-169.33	-211.18	-241.46	-270.63	-299.29	-327.74	-233.52	-136.63	-32.52	31.11	74.6			
AL76YF	0.00	-3.76	-4.54	-5.05	-9.14	-15.75	-23.41	-28.88	-33.4	-36.71	-30.9	-22.89	-14.75	-9.06	-9.4			
AL76ZF	0.00	-4.57	-8.22	-11.34	-15.39	-22.31	-29.92	-34.82	-38.06	-41.03	-37.57	-31.31	-21.72	-16.15	-16.8			
AL78XF	0.00	-11.51	-23.18	-36.02	-49.24	-64.03	-80.81	-97.31	-113.78	-129.41	-103.59	-78.67	-53.5	-24.41	-11.3			
AL78YF	0.00	-10.51	-22.69	-36.26	-48.07	-58.31	-68.04	-79.01	-91.63	-104.18	-73.72	-46.65	-22.06	2.46	17.2			
AL78ZF	0.00	2.13	3.21	4.96	7.70	11.80	18.36	23.99	29.89	34.97	13.50	-1.65	-12.27	-18.4	-19.4			
AU78XA	0.00	-7.04	-11.01	-14.16	-14.35	-8.15	0.06	7.72	13.41	18.3	22.9	30.69	41.45	46.4	51.4			
AU78XB	0.00	-10.44	-18.63	-23.46	-25.79	-22.26	-21.56	-26.37	-33.96	-44.0	-50.66	-42.65	-17.43	4.29	29.1			
AU78ZC**	0.00	-0.19	-0.33	-0.49	-0.63	-0.79	-0.93	-1.03	-1.10	-1.13	-0.97	-0.81	-0.54	-0.08	0.15			
AU78ZD**	0.00	0.05	0.09	0.14	0.18	0.21	0.20	0.19	0.16	0.12	0.07	0.01	-0.05	-0.17	-0.20			
AU76XA	0.00	73.74	147.65	219.67	291.44	368.26	450.12	523.83	596.33	667.12	550.25	429.03	298.7	142.9	70.9			
AU76XB	0.00	74.98	148.97	218.13	283.84	350.61	416.42	475.51	533.75	590.36	478.73	361.19	231.93	74.41	2.25			
AU76ZC**	0.00	-0.02	-0.01	0.06	0.17	0.31	0.48	0.66	0.82	0.98	0.63	0.32	0.10	-0.01	-0.03			
AU76ZD**	0.00	-0.03	-0.03	-0.05	-0.06	-0.06	-0.06	-0.05	-0.04	-0.03	-0.10	-0.14	-0.16	-0.16	-0.14			
AU75XA	0.00	14.8	32.81	49.77	67.52	85.68	101.94	119.76	137.82	156.45	121.77	86.01	48.66	10.27	-7.58			
AU75XB	0.00	39.7	83.05	128.32	177.14	233.77	293.26	343.53	390.83	435.97	369.84	302.57	228.13	123.4	81.3			
AU75ZC**	0.00	0.00	0.01	-0.03	-0.09	-0.14	-0.15	-0.15	-0.11	-0.07	-0.04	-0.02	-0.03	-0.13	-0.16			
AU75ZD**	0.00	0.01	0.02	0.04	0.06	0.07	0.05	0.04	0.03	0.02	-0.03	-0.07	-0.11	-0.1	-0.11			
AACIXD*	0.00	0.04	0.09	0.13	0.18	0.22	0.27	0.33	0.38	0.43	0.36	0.28	0.21	0.1	0.05			
AACOXD*	0.00	0.01	0.06	0.08	0.12	0.17	0.21	0.25	0.28	0.35	0.29	0.24	0.18	0.10	0.06			
RXDFAC*	0.00	-0.01	-0.03	-0.04	-0.06	-0.07	-0.08	-0.10	-0.12	-0.14	-0.13	-0.10	-0.07	-0.04	-0.04			

TABLE C-4. OVERHEAD STOWAGE BIN CALIBRATION TEST RESULTS, Continued, [TEST BIN A - CAL 2]

Mnemonic	Nominal Pull Force (lbs.)												Force in Pounds / *Inch / **Millivolt			
	0	200	400	600	800	1000	1200	1400	1600	1800	1400	1000	600	200	0	0
OBAPXF	0.00	197.04	393.7	591.01	784.93	981.27	1177.72	1373.6	1568.79	1761.76	1373.75	982.77	591.12	199.88	1.06	
AL75XF	0.00	-33.62	-44.97	-85.94	-107.98	-129.36	-155.3	-187.05	-220.17	-255.99	-185.75	-116.69	-65.35	-24.57	2.51	
AL75YF	0.00	14.61	29.26	46.49	61.34	73.72	86.25	100.55	114.71	128.83	109.08	77.58	48.12	16.3	0.88	
AL75ZF	0.00	7.49	13.78	18.61	26.76	34.3	38.44	40.84	43.69	47.05	47.13	39.46	24.11	9.81	1.67	
AL76XF	0.00	-56.09	-97.8	-115.63	-172.23	-228.29	-280.21	-326.31	-366.77	-397.5	-304.81	-206.92	-102.06	-39.5	3.0	
AL76YF	0.00	-1.62	-3.29	-2.75	-7.64	-12.09	-16.19	-20.60	-25.01	-28.74	-22.80	-14.69	-5.91	-0.07	0.75	
AL76ZF	0.00	0.45	-3.12	-3.45	-6.3	-9.62	-12.96	-16.30	-19.57	-23.03	-20.58	-14.32	-5.48	-0.38	-1.28	
AL78XF	0.00	-9.74	-23.70	-38.65	-50.17	-62.92	-75.92	-89.19	-102.74	-117.63	-91.98	-66.61	-41.34	-11.75	1.09	
AL78YF	0.00	-12.98	-26.61	-43.46	-55.06	-66.86	-79.25	-97.86	-104.82	-118.38	-88.68	-61.80	-37.62	-13.17	1.07	
AL78ZF	0.00	-6.74	-12.3	-17.07	-21.32	-25.98	-31.57	-37.41	-43.90	-50.48	-29.45	-13.92	-3.83	2.56	3.37	
AU78XA	0.00	-12.52	-16.21	-20.33	-26.22	-31.12	-36.42	-40.73	-43.34	-40.94	-34.84	-27.90	-17.44	-10.23	-3.61	
AU78XB	0.00	-24.59	-31.26	-36.22	-48.36	-58.34	-67.79	-76.27	-83.45	-87.39	-92.52	-84.43	-60.21	-37.13	-11.9	
AU78ZC**	0.00	-0.16	-0.37	-0.59	-0.75	-0.88	-1.04	-1.18	-1.3	-1.4	-1.23	-1.05	-0.78	-0.29	-0.05	
AU78ZD**	0.00	0.03	0.09	0.17	0.20	0.24	0.28	0.30	0.31	0.28	0.23	0.19	0.12	0.00	-0.04	
AU76XA	0.00	64.46	142.63	217.02	281.53	347.09	411.63	475.66	539.56	602.64	487.22	365.52	235.58	81.28	7.30	
AU76XB	0.00	70.66	153.95	230.29	294.45	357.74	418.72	477.72	536.23	595.66	485.54	366.75	235.96	75.61	-1.99	
AU76ZC**	0.00	-0.01	0.00	0.06	0.15	0.28	0.44	0.63	0.82	1.00	0.66	0.34	0.12	0.01	0.00	
AU76ZD**	0.00	-0.02	-0.03	-0.02	-0.01	0.01	0.02	0.04	0.07	0.09	0.02	-0.02	-0.04	-0.03	-0.01	
AU75XA	0.00	16.58	35.22	52.34	68.97	86.22	104.08	122.72	141.54	160.90	126.86	90.29	52.38	14.13	-3.96	
AU75XB	0.00	34.14	84.46	134.32	171.02	208.27	245.53	282.70	321.58	364.64	299.71	232.47	157.44	51.70	5.94	
AU75ZC**	0.00	-0.01	0.01	0.04	0.03	0.03	0.03	0.03	0.06	0.14	0.16	0.18	0.17	0.08	0.06	
AU75ZD**	0.00	0.04	0.05	0.04	0.06	0.08	0.10	0.11	0.12	0.11	0.07	0.03	-0.01	-0.11	-0.01	
AACIXD*	0.00	0.05	0.09	0.14	0.18	0.21	0.27	0.30	0.34	0.39	0.32	0.24	0.17	0.07	0.01	
AACOXD*	0.00	0.01	0.05	0.09	0.11	0.15	0.18	0.21	0.24	0.29	0.24	0.18	0.12	0.04	0.00	
RXDFAC*	0.00	-0.01	-0.03	-0.04	-0.06	-0.07	-0.09	-0.10	-0.12	-0.13	-0.12	-0.09	-0.06	-0.03	-0.01	

TABLE C-4. OVERHEAD STOWAGE BIN CALIBRATION TEST RESULTS, Continued, [TEST BIN B - CAL 1]

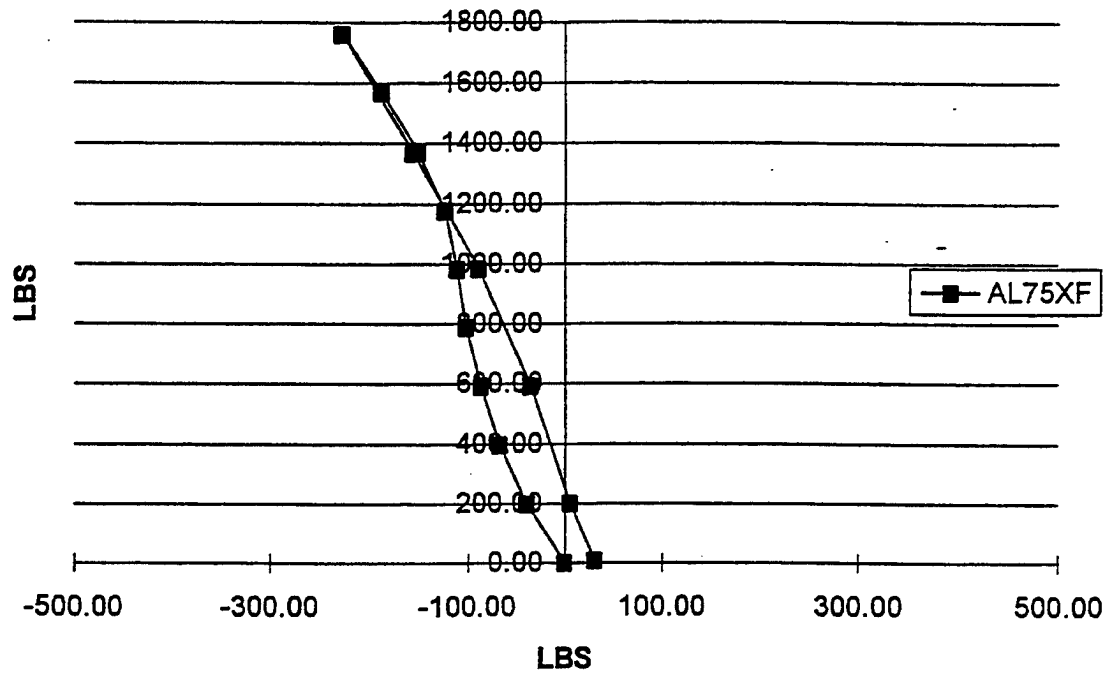
Mnemonic	Nominal Pull Force (lbs.)										
	0	200	400	600	800	1000	800	600	400	200	0
OBBPXF	0.00	195.72	391.83	587.75	783.31	981.13	782.08	589.12	392.27	196.35	11.53
B1ZF	0.00	-2.54	-2.80	-7.30	-10.52	-14.98	-8.87	-3.64	-1.95	-3.18	-3.66
B2ZF	0.00	-6.63	-12.04	-13.59	-24.03	-36.47	-29.39	-19.86	-15.06	-9.69	-6.22
B3ZF	0.00	0.17	-6.91	-9.31	-3.24	-50.73	-83.27	-70.96	-42.78	-40.31	-33.63
B4ZF	0.00	-0.12	-0.03	-2.13	-4.42	-13.09	-8.43	-4.24	-2.49	-2.61	-3.31
B5XF	0.00	93.48	190.88	290.26	385.16	481.55	393.05	305.17	209.61	111.23	17.43
B6XF	0.00	83.26	167.38	250.58	328.89	408.45	328.69	249.96	165.16	79.08	-1.93
B7YF1	0.00	8.33	17.04	26.40	34.26	46.10	31.92	21.58	10.59	-0.08	-8.62
B7YF2	0.00	-22.74	-45.80	-68.70	-90.87	-115.16	-91.55	-69.82	-47.00	-23.49	-1.49
B8YF1	0.00	-9.75	-16.97	-22.75	-25.47	-22.73	-13.59	-4.59	4.57	13.55	21.35
B8YF2	0.00	-18.44	-36.28	-53.20	-69.22	-84.56	-66.18	-48.90	-31.99	-15.23	0.34
B9YF1	0.00	31.02	62.42	92.45	120.28	146.14	119.17	92.16	62.41	30.43	-0.33
B9YF2	0.00	-2.06	-4.30	-6.79	-9.71	-13.42	-10.31	-73.8	-4.52	-1.66	0.96
B10YF1	0.00	80.17	158.23	227.54	280.54	313.36	245.06	177.50	106.66	35.83	-26.92
B10YF2	0.00	15.99	31.72	48.65	67.36	91.79	78.71	65.36	49.48	31.40	11.57
B11YF1	0.00	-5.00	-9.13	-13.88	-20.44	-28.75	-21.73	-14.56	-9.39	-4.92	-0.21
B11YF2	0.00	-26.63	-53.41	-79.24	-104.30	-129.07	-105.91	-83.77	-57.97	-30.85	-4.78
BIXD*	0.00	0.02	0.04	0.06	0.09	0.12	0.11	0.09	0.06	0.04	0.01
BOXD*	0.00	0.01	0.03	0.04	0.06	0.07	0.07	0.05	0.04	0.03	0.01

Force in Pounds / *Inch / **Millivolt

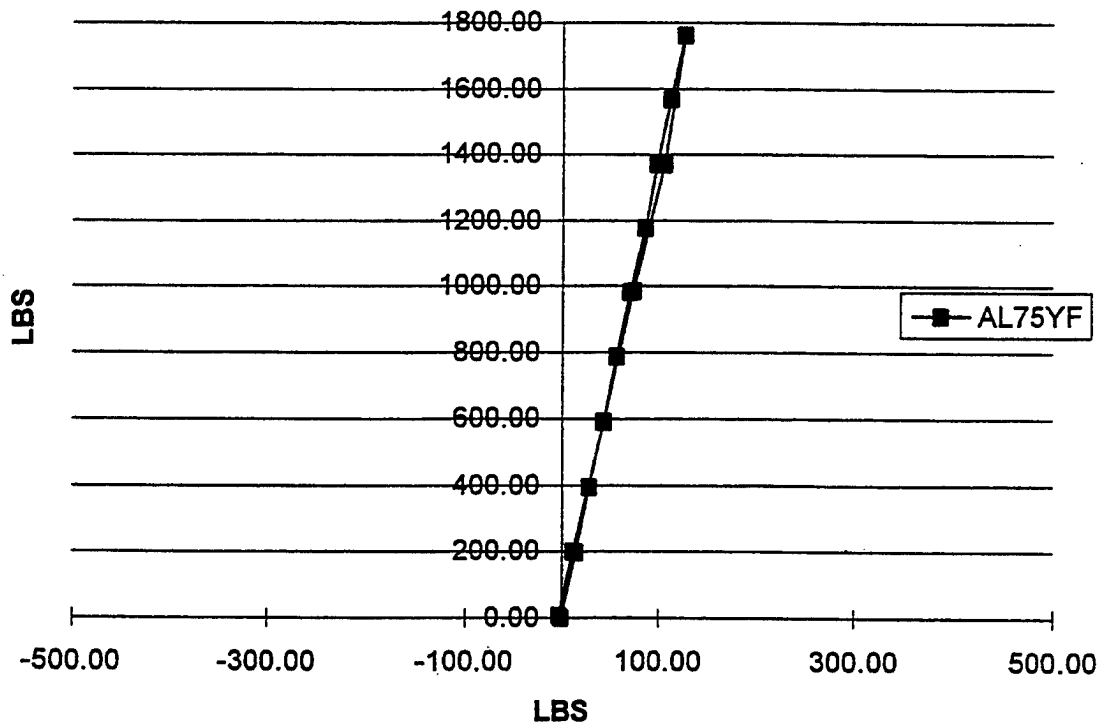
TABLE C-4. OVERHEAD STOWAGE BIN CALIBRATION TEST RESULTS, Continued, [TEST BIN B - CAL 2]

Mnemonic	Nominal Pull Force (lbs.)										
	0	200	400	600	800	1000	800	600	400	200	0
OBBPXF	0.00	196.33	391.99	587.52	785.75	980.41	782.95	588.17	393.41	199.12	-7.29
B1ZF	0.00	-3.47	-2.81	-4.82	-9.96	-14.93	-9.40	-4.02	-2.28	-3.27	-3.51
B2ZF	0.00	-6.25	-12.09	-15.79	-25.60	-36.94	-30.33	-20.16	-14.92	-9.11	-4.48
B3ZF	0.00	-5.40	-10.13	-1.75	5.88	-47.86	-76.25	-58.06	-12.08	-10.6	-3.69
B4ZF	0.00	-2.43	-1.61	-2.79	-6.27	-9.83	-5.53	-2.16	-0.30	-0.58	-0.35
B5XF	0.00	91.66	187.27	285.08	377.02	469.12	381.58	293.08	199.45	101.71	-2.65
B6XF	0.00	82.96	168.85	254.93	334.50	413.26	333.89	254.70	171.60	85.97	-3.90
B7YF1	0.00	7.70	18.99	28.88	37.28	52.24	37.72	26.28	15.73	6.02	7.52
B7YF2	0.00	-23.17	-45.97	-69.57	-91.71	-116.46	-92.94	-70.73	-48.29	-24.93	1.42
B8YF1	0.00	-10.01	-19.47	-28.81	-37.81	-44.74	-35.16	-25.88	-16.72	-7.77	1.42
B8YF2	0.00	-18.40	-35.92	-53.23	-69.28	-85.11	-66.41	-49.25	-32.43	-15.82	1.90
B9YF1	0.00	31.14	62.79	93.90	120.60	147.13	120.42	93.41	64.60	32.71	-1.20
B9YF2	0.00	-2.10	-4.45	-7.61	-11.29	-15.14	-12.27	-9.25	-6.36	-3.52	1.18
B10YF1	0.00	81.25	157.62	228.11	286.70	339.38	270.45	202.59	134.11	64.73	-7.01
B10YF2	0.00	16.90	32.33	48.94	64.71	81.71	69.50	56.11	40.41	22.05	1.12
B11YF1	0.00	-5.46	-9.00	-13.93	-21.28	-29.09	-22.87	-16.25	-11.16	-6.85	-0.46
B11YF2	0.00	-26.10	-52.18	-78.40	-102.54	+126.37	-103.64	-81.36	-56.37	-29.42	0.49
BIXD*	0.00	0.00	0.03	0.05	0.08	0.10	0.10	0.07	0.05	0.02	0.00
BOXD*	0.00	0.01	0.02	0.04	0.05	0.06	0.06	0.05	0.03	0.02	0.00
Force in Pounds / *Inch / **Millivolt											

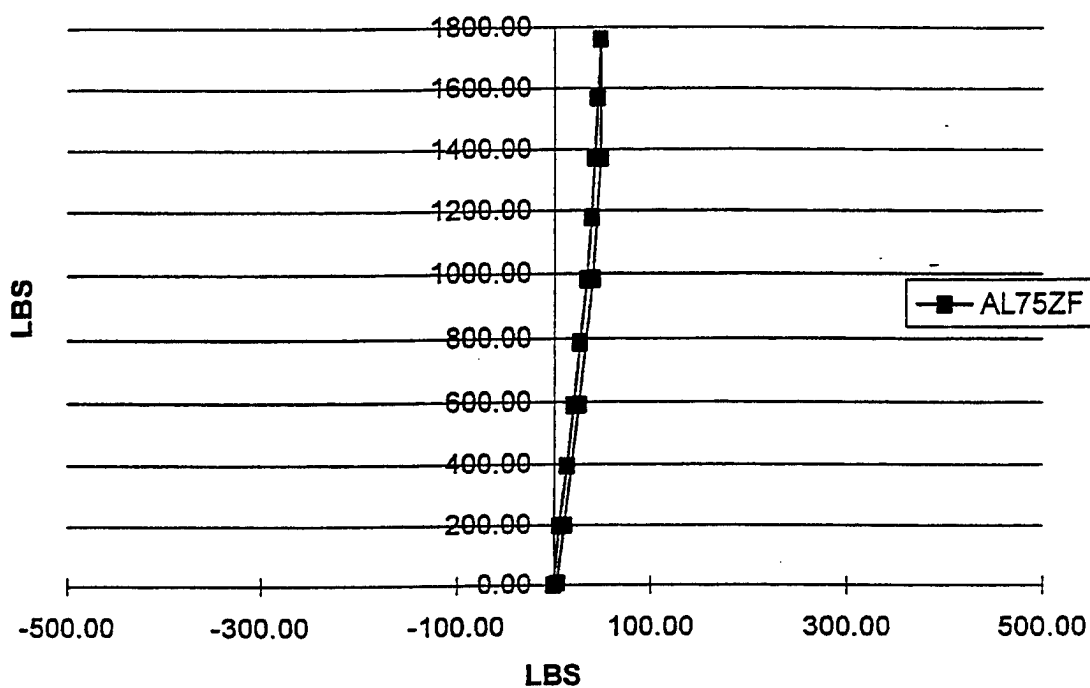
BIN A / CAL 1 LOWER FRONT SUPPORT / LONGITUDINAL FORCE



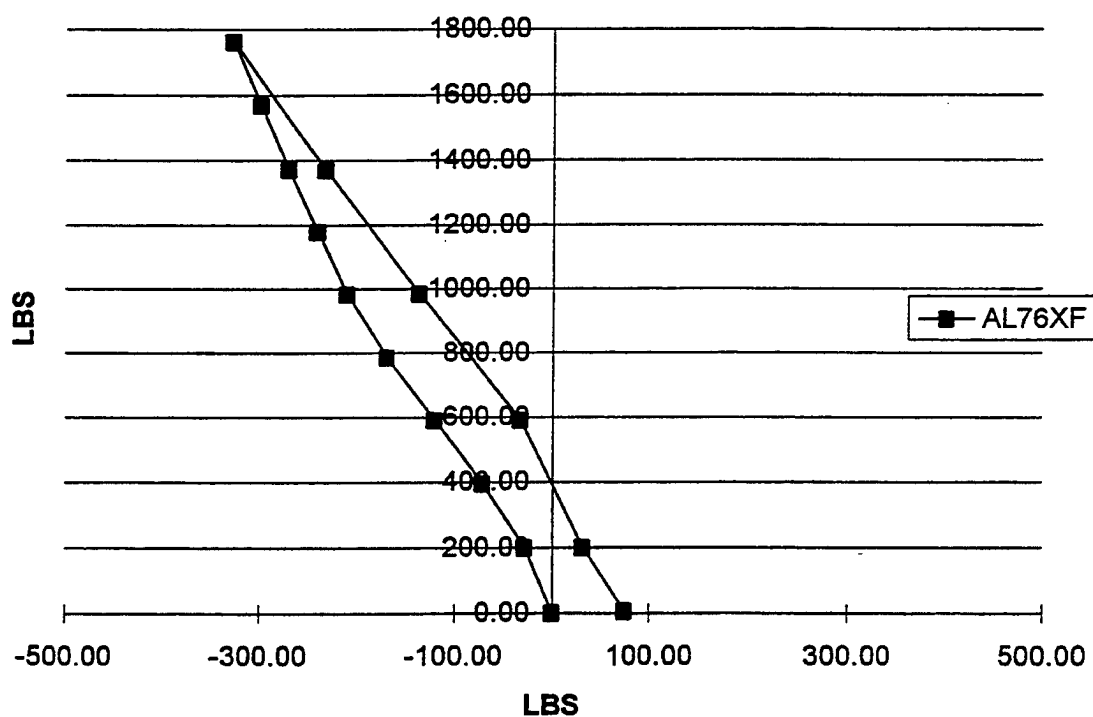
BIN A / CAL 1 LOWER FRONT SUPPORT / LATERAL FORCE



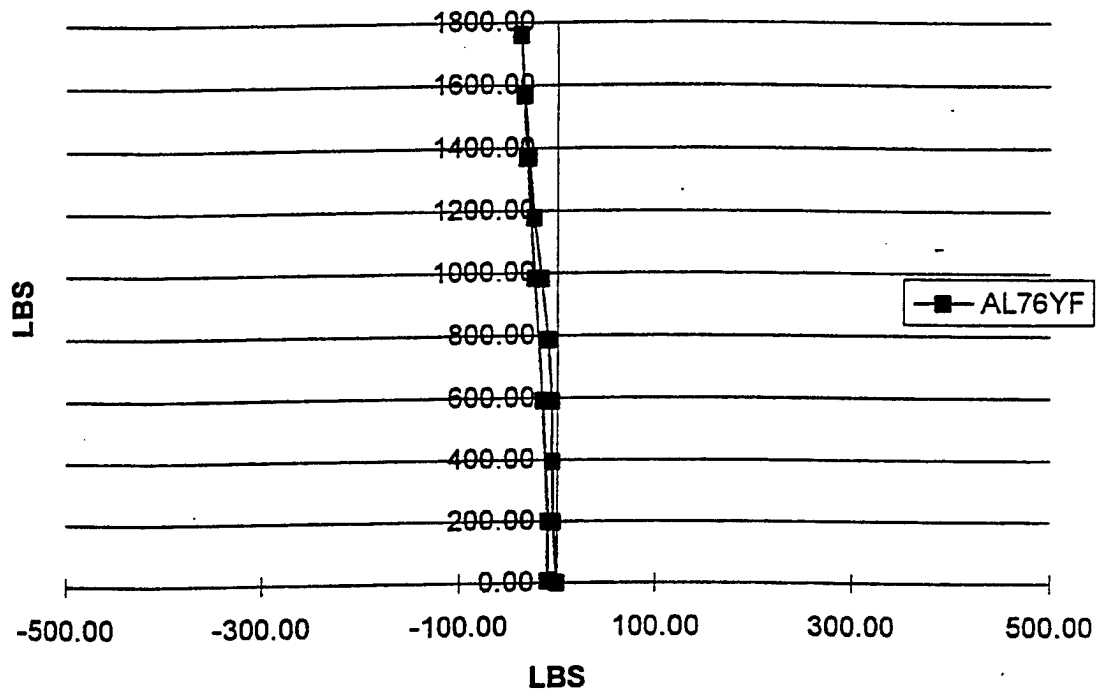
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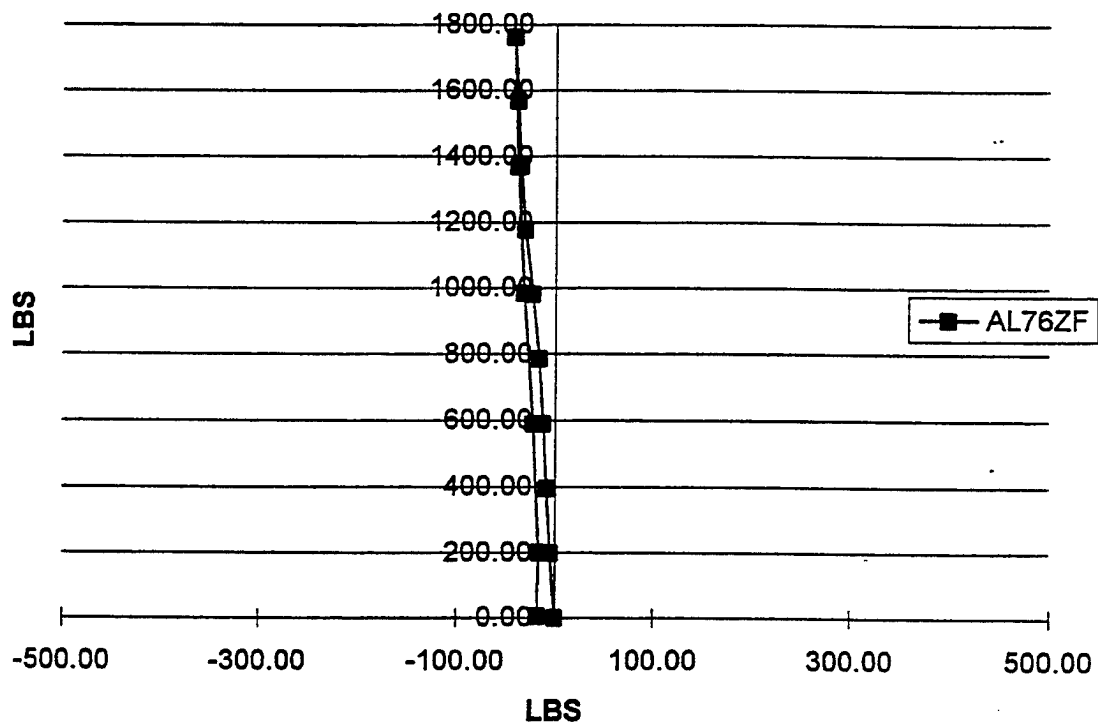
BIN A / CAL 1 LOWER MID SUPPORT / LONGITUDINAL FORCE



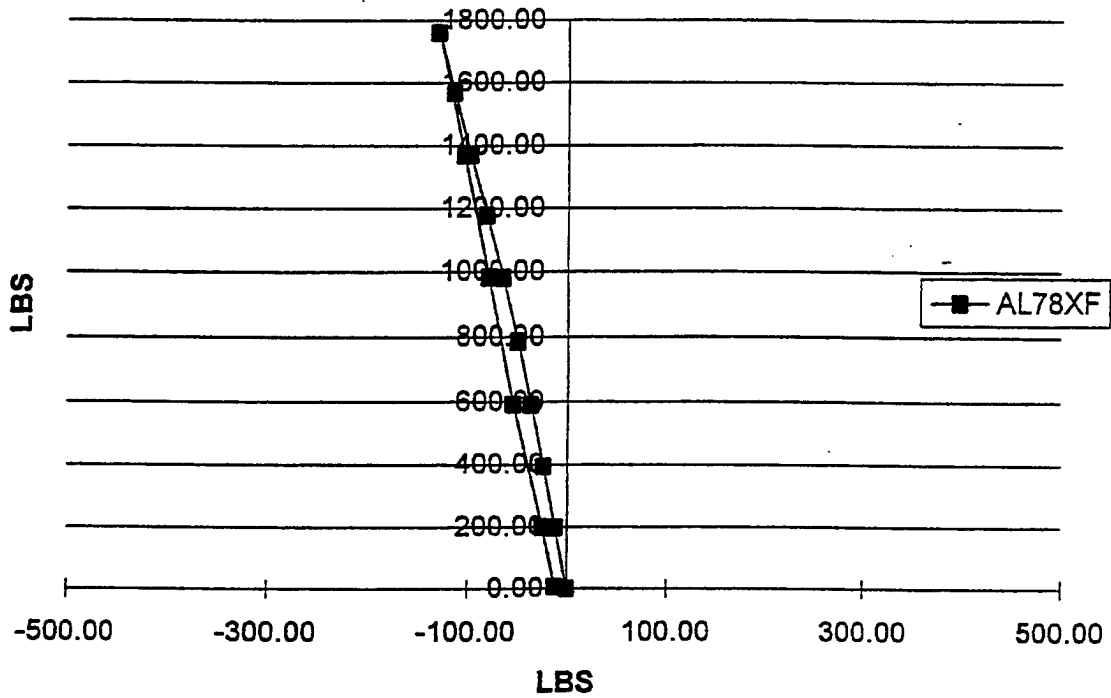
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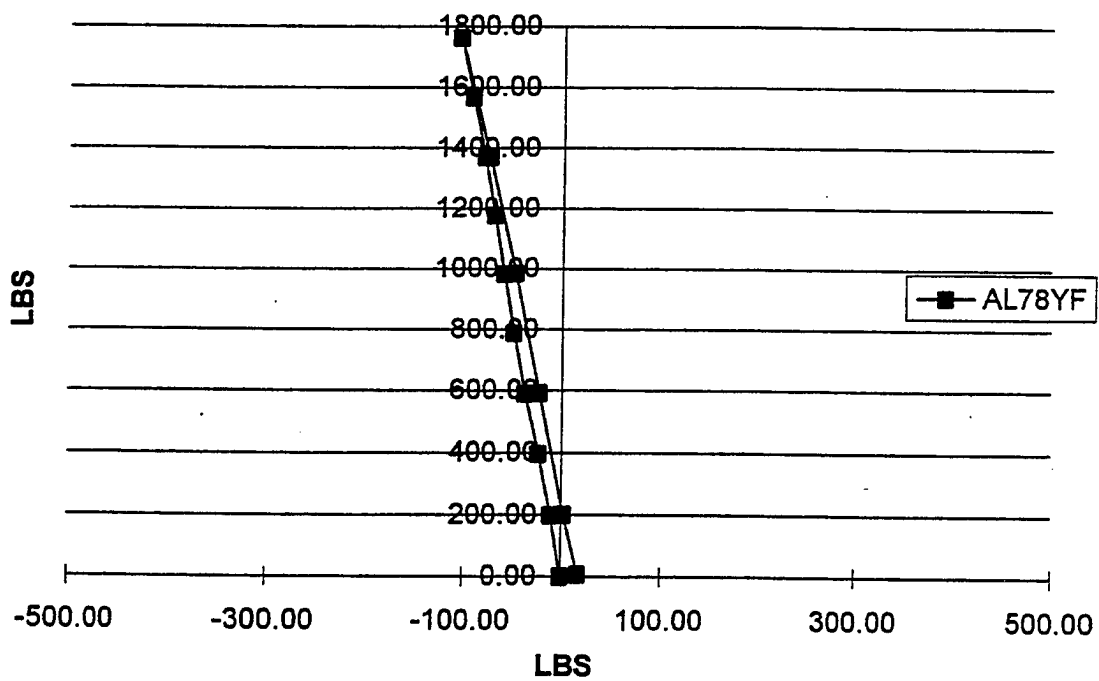
BIN A / CAL 1 LOWER MID SUPPORT / VERTICAL FORCE



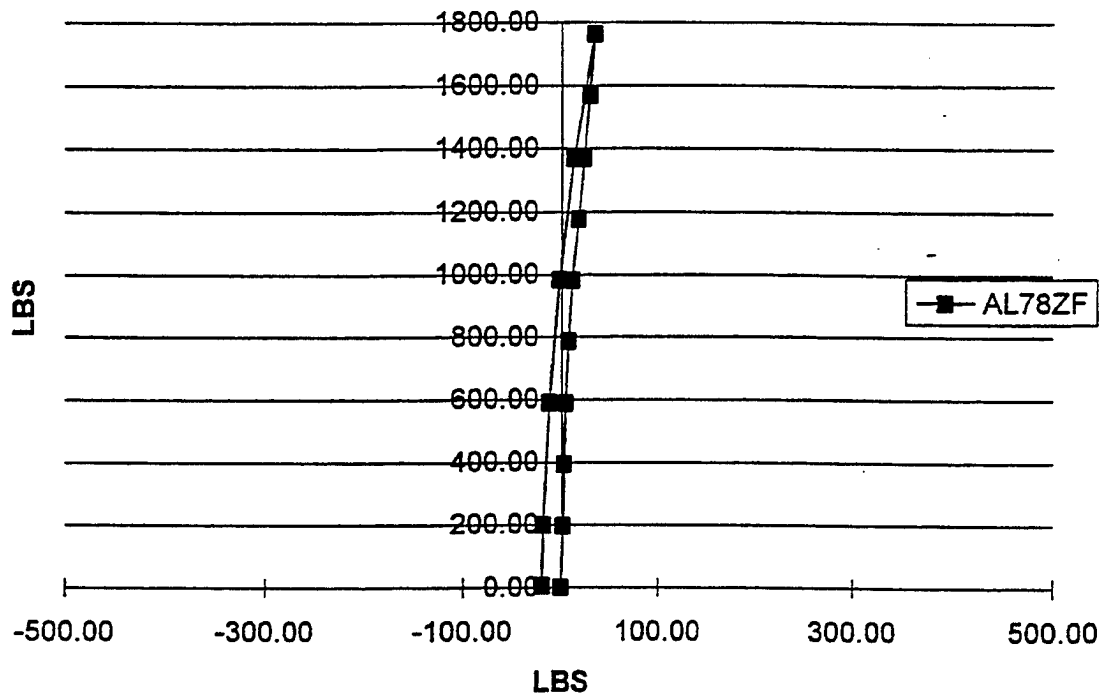
BIN A / CAL 1 LOWER AFT SUPPORT / LONGITUDINAL FORCE



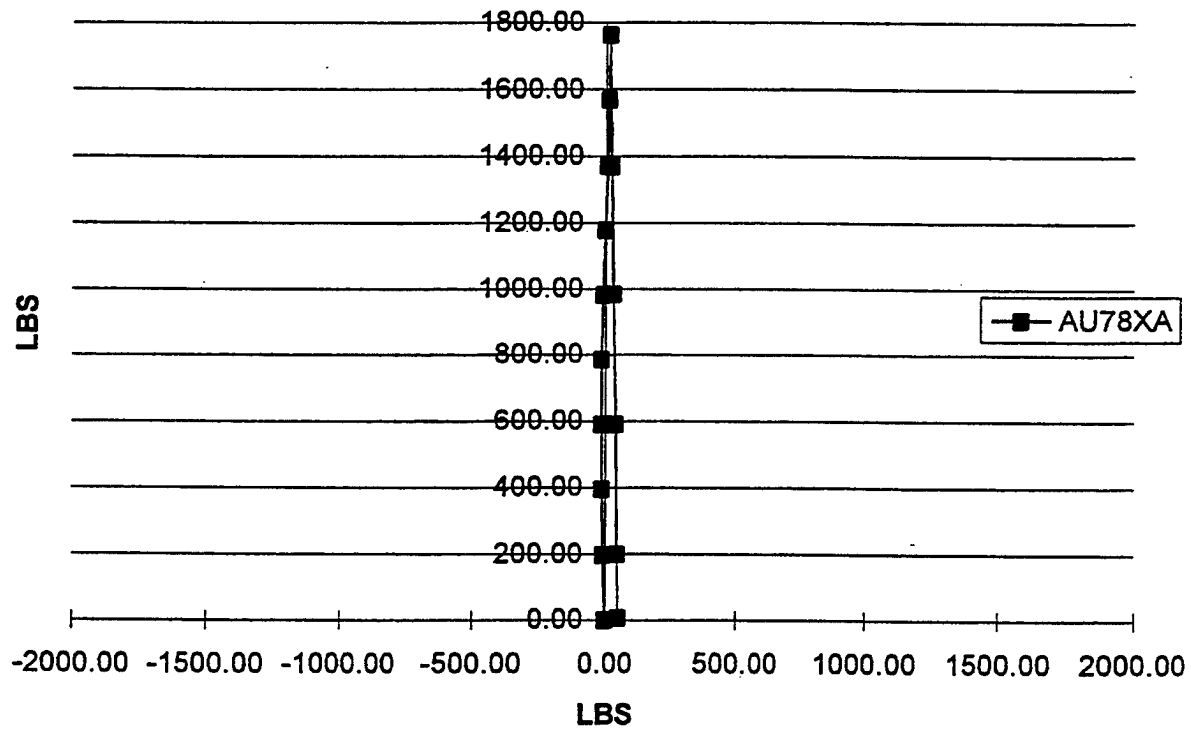
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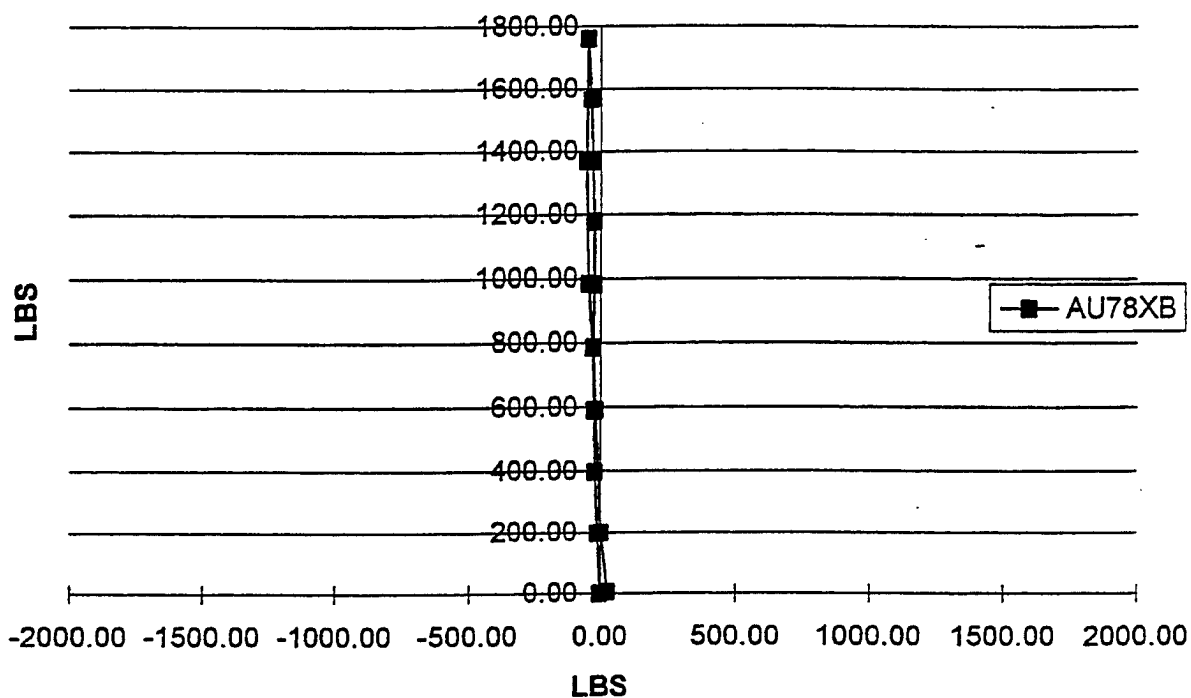
BIN A / CAL 1 LOWER AFT SUPPORT / INNER VERTICAL FORCE



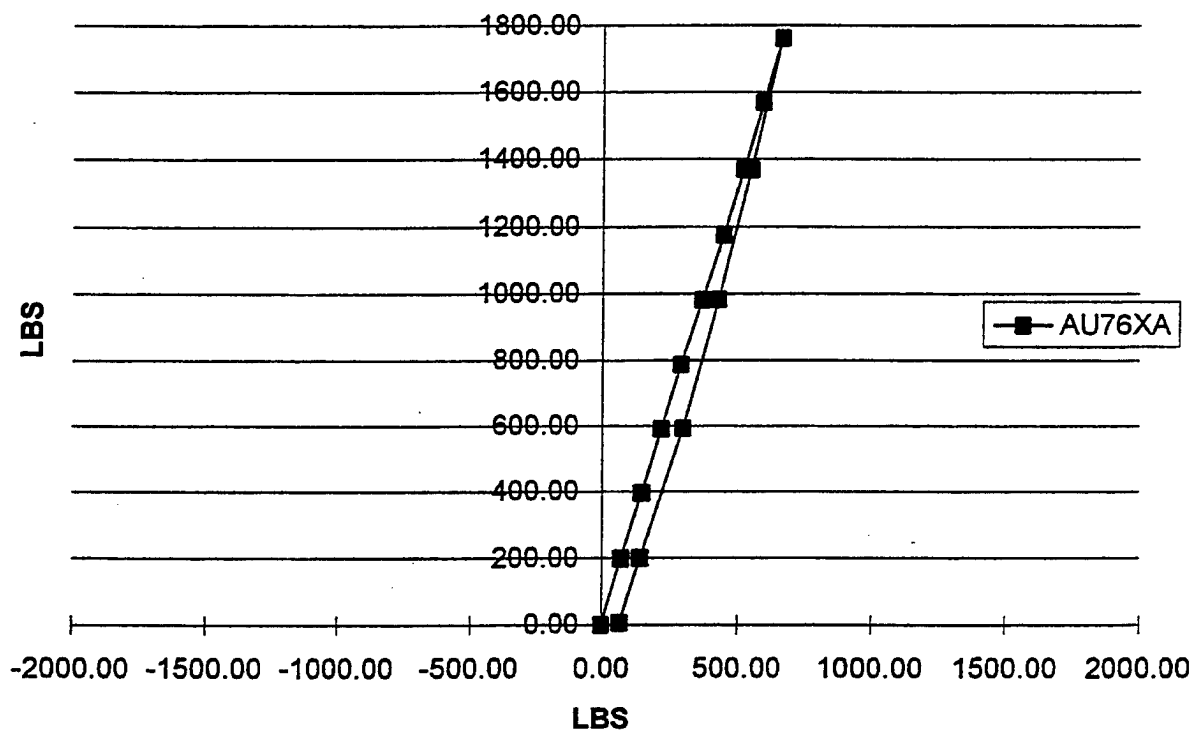
BIN A / CAL 1 UPPER FRONT SUPPORT / INNER LONGITUDINAL FORCE



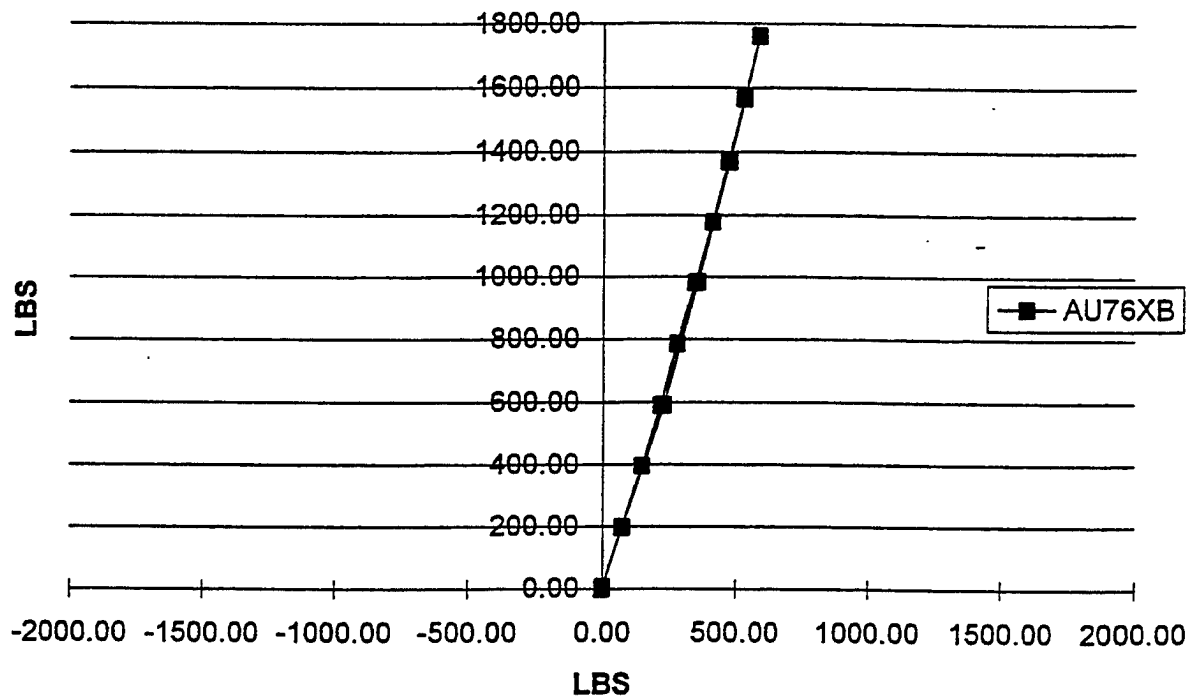
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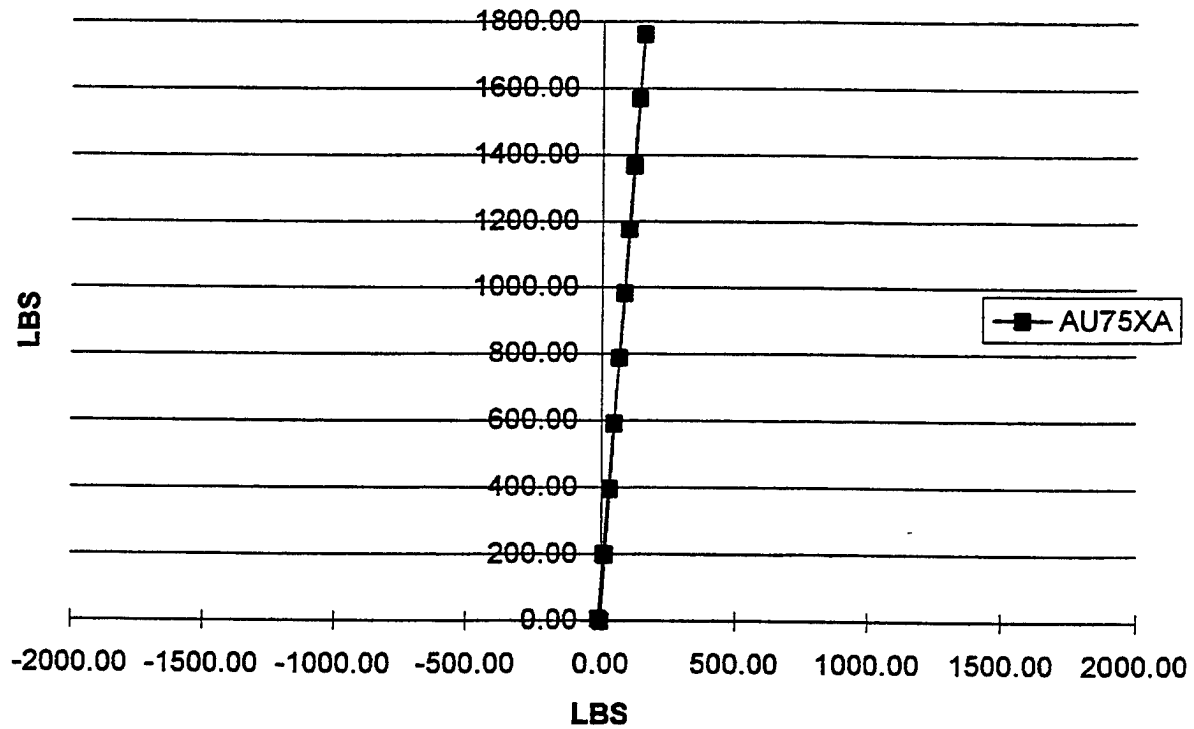
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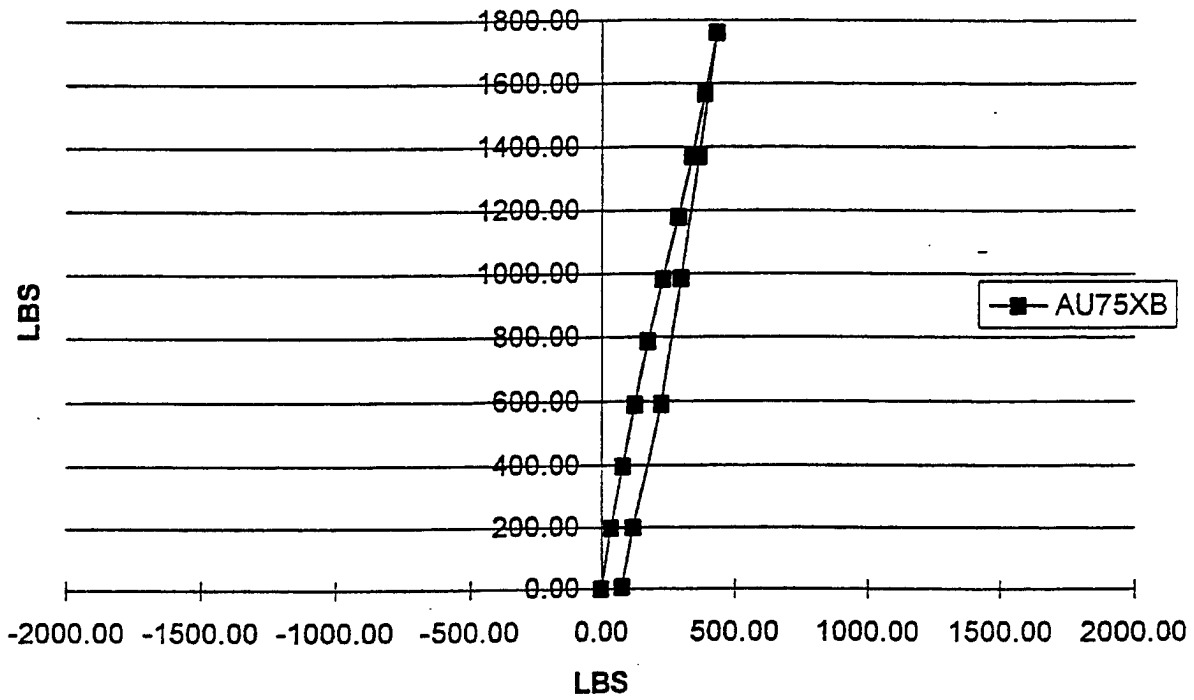
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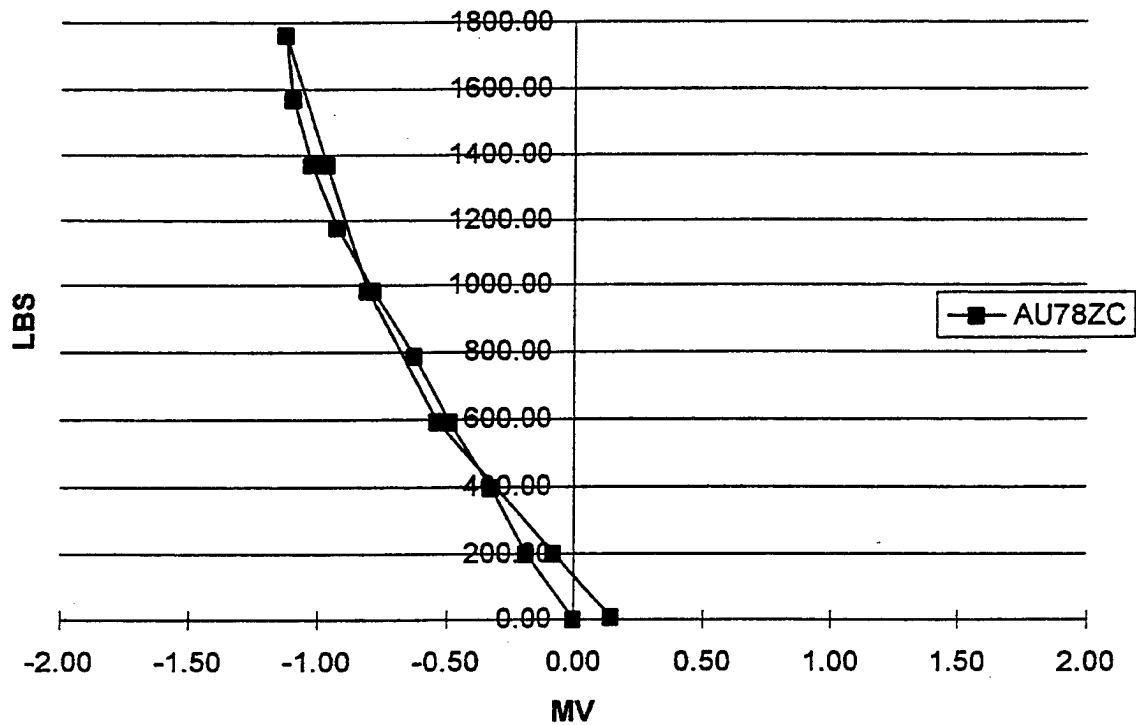
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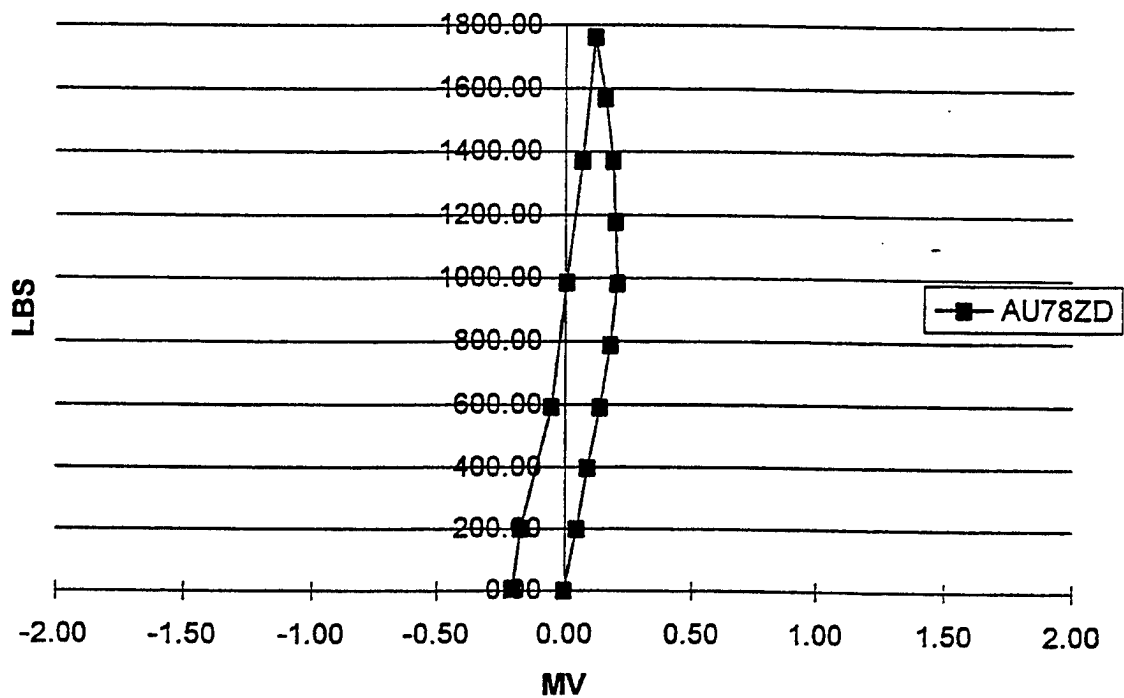
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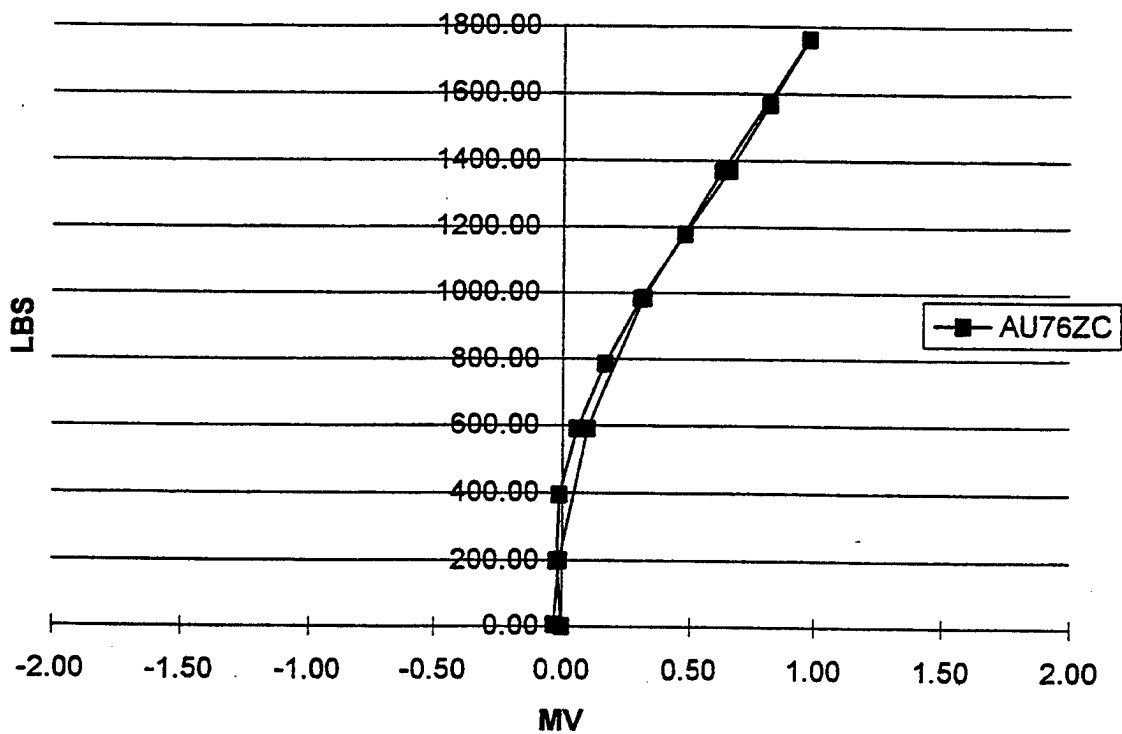
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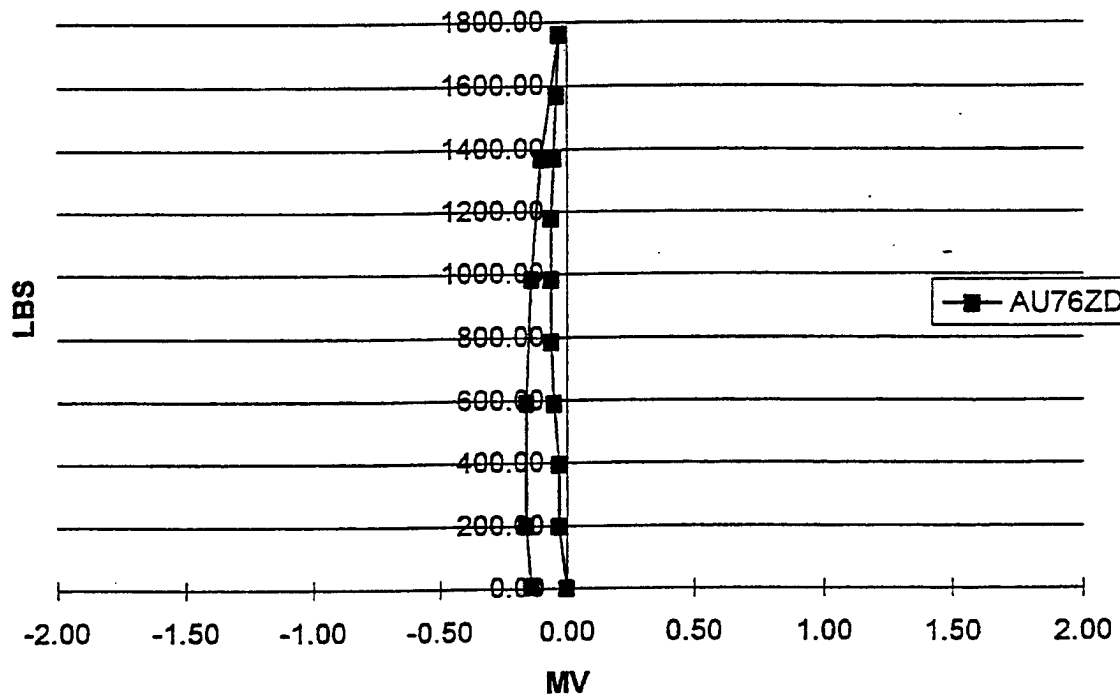
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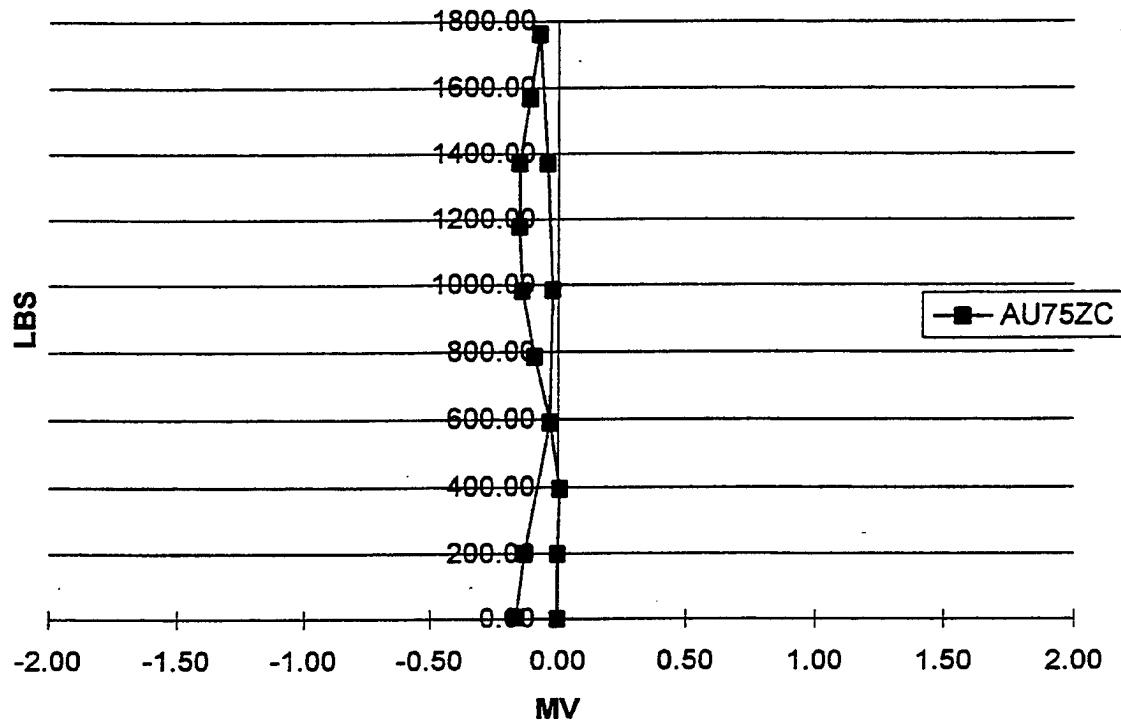
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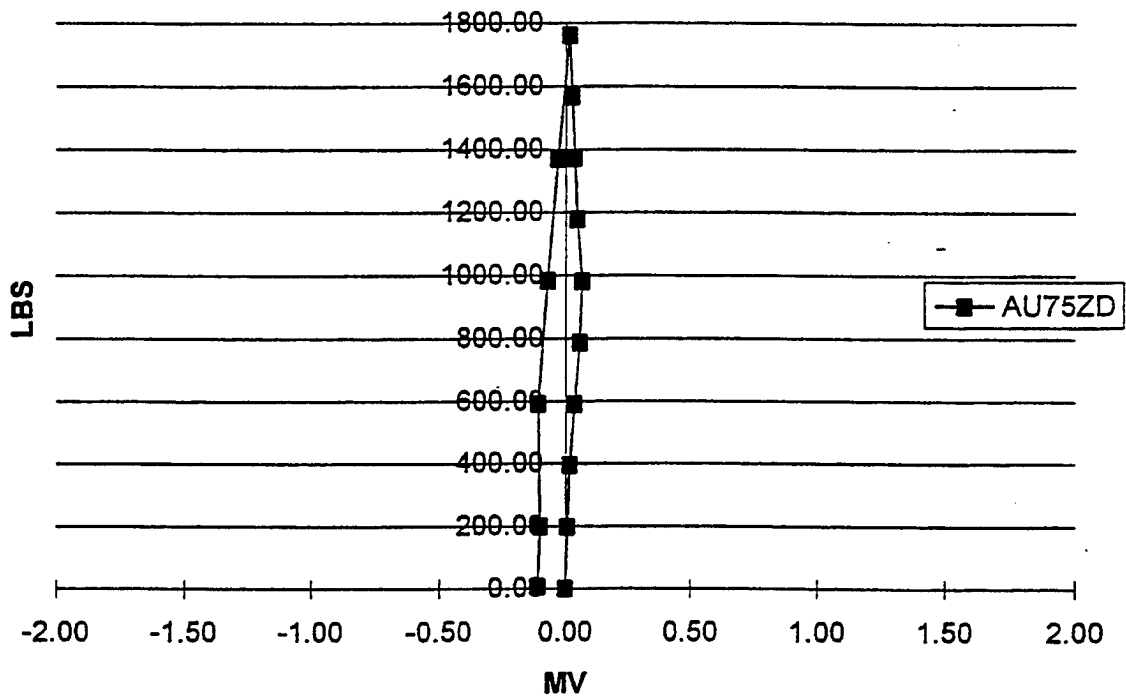
BIN A / CAL 1 UPPER MID SUPPORT / INNER VERTICAL MV



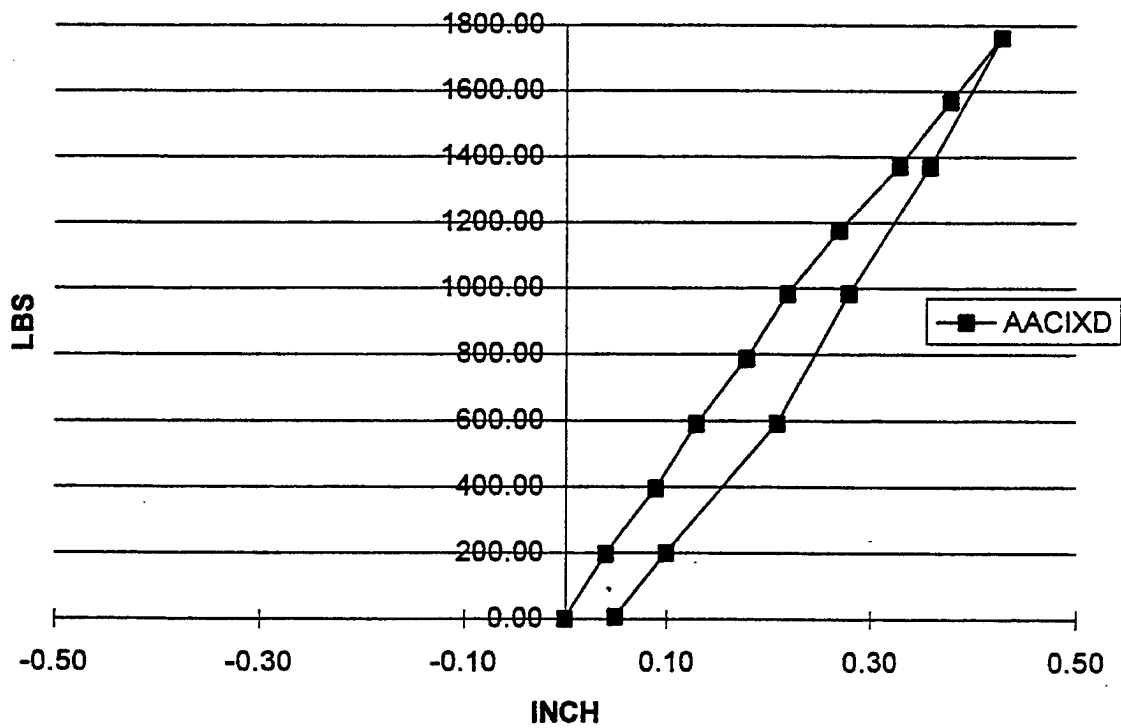
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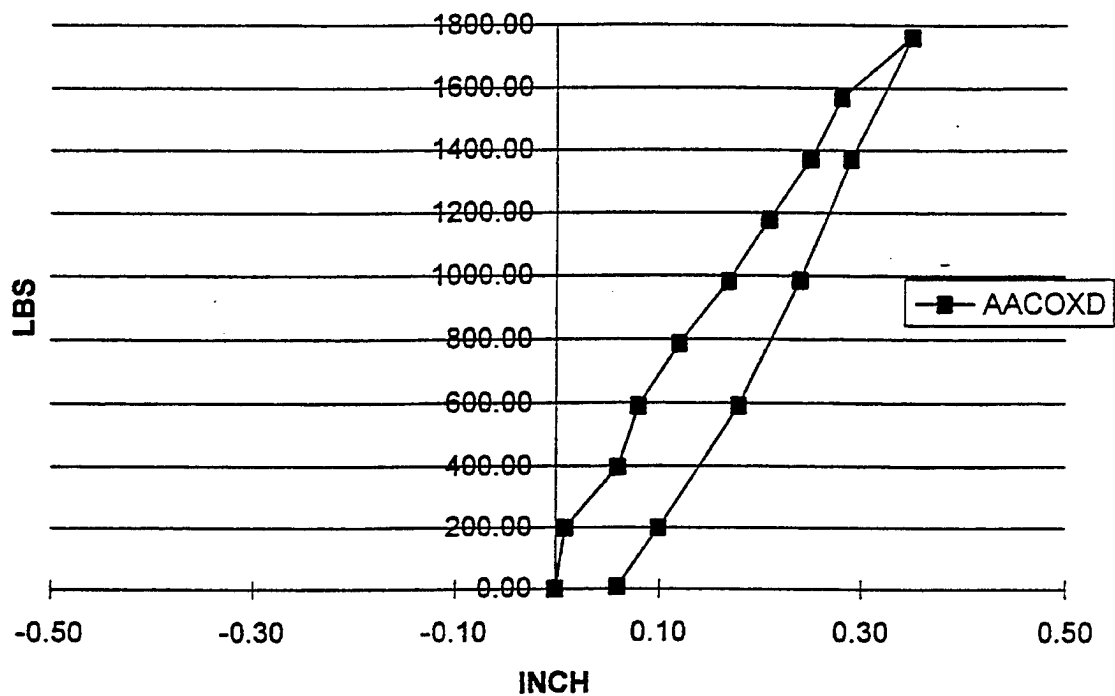
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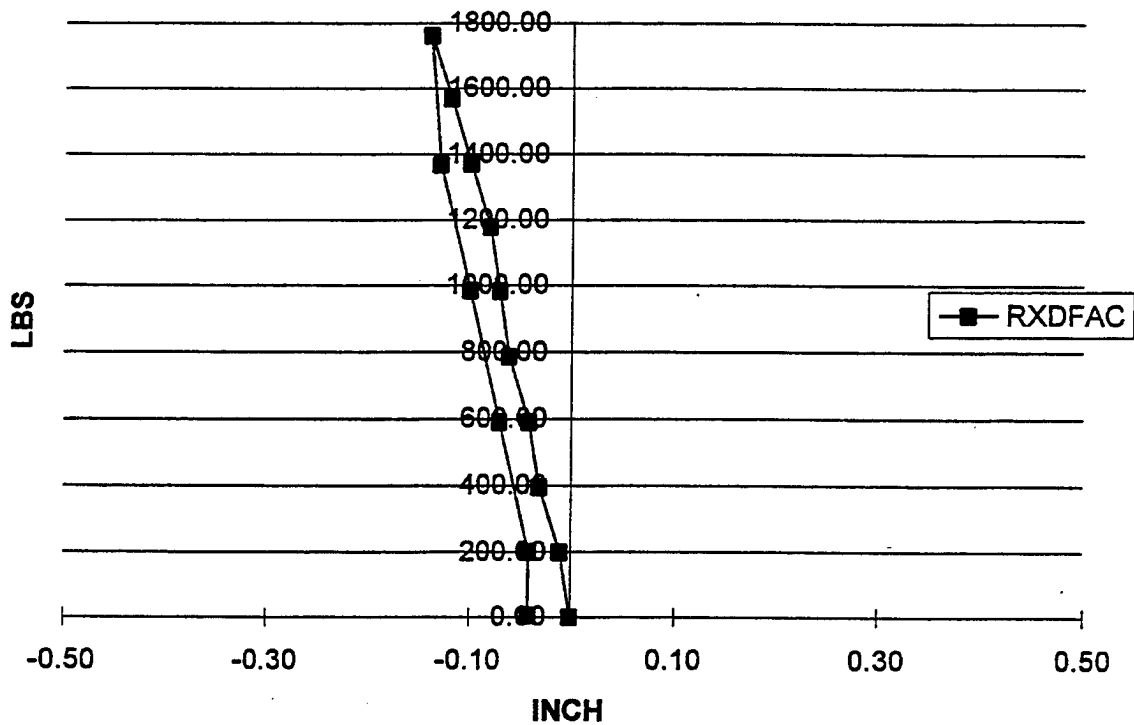
BIN A / CAL 1 AFT COMPARTMENT / INNER LONGITUDINAL DISPLACEMENT



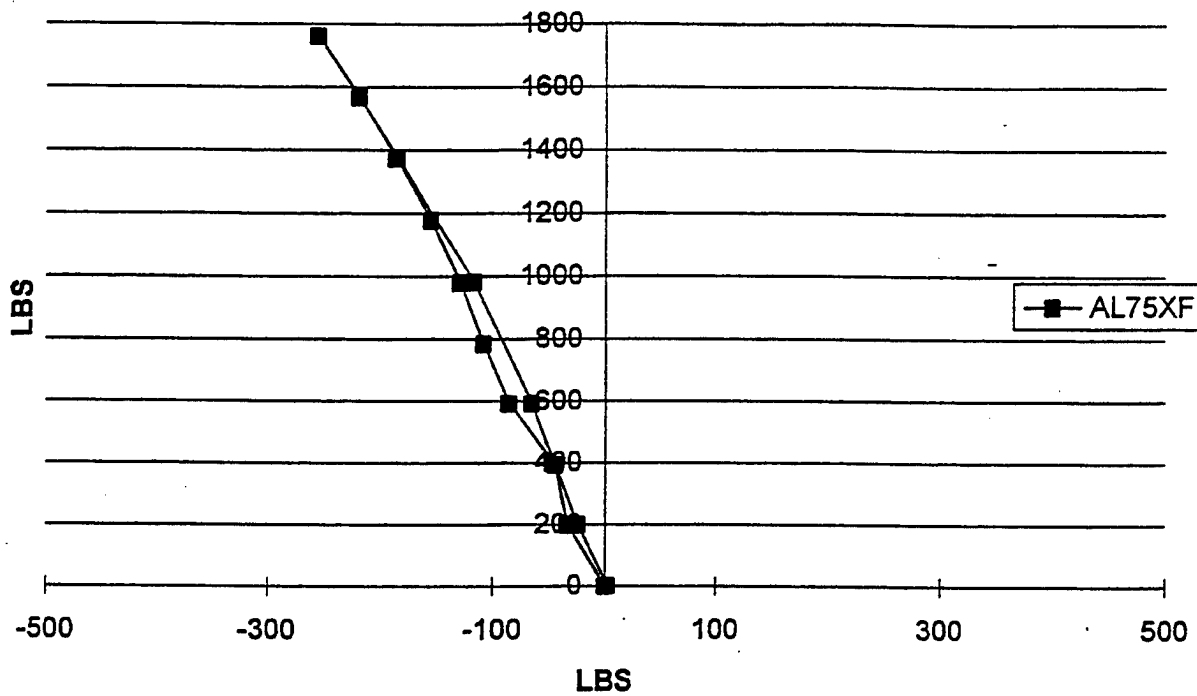
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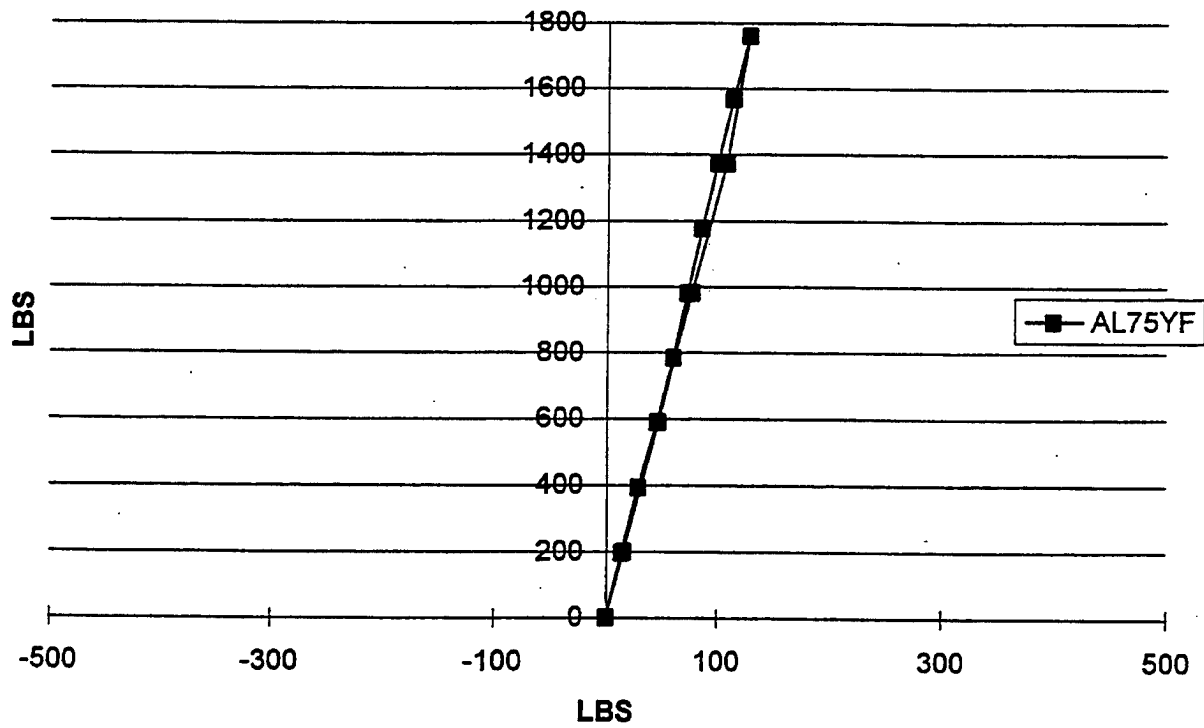
BIN A / CAL 1 RELATIVE LONGITUDINAL DISPLACEMENT FROM FRONT-TO-AFT COMPARTMENTS



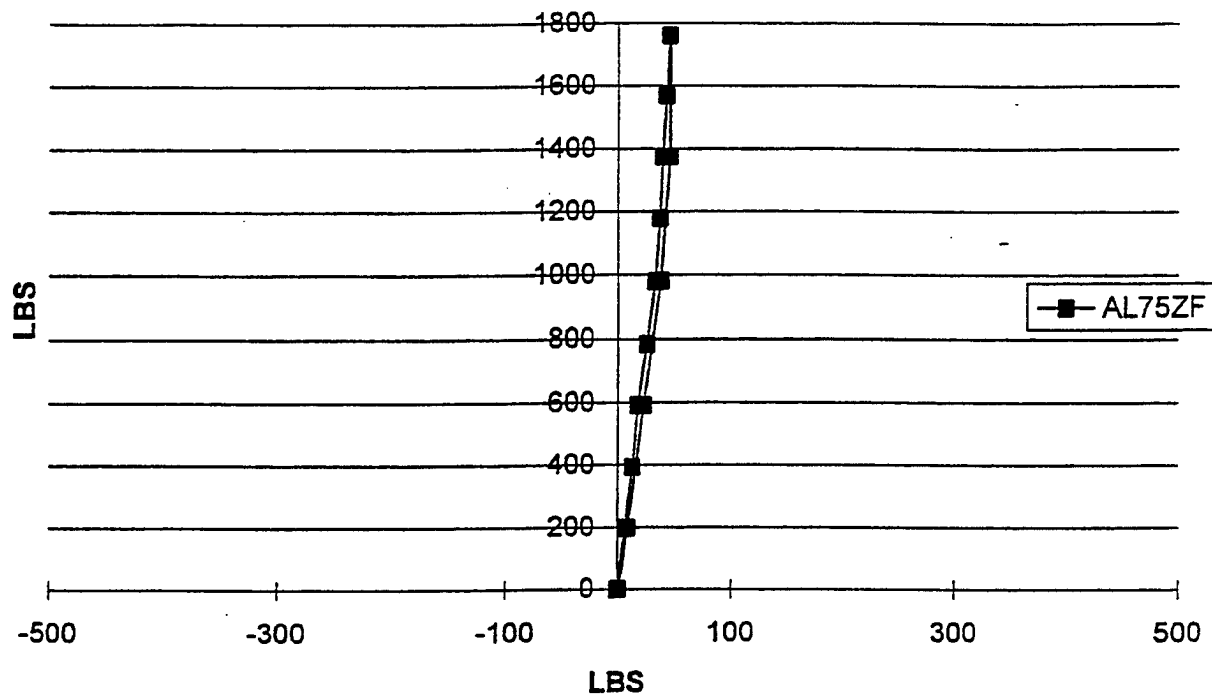
BIN A / CAL 2 LOWER FRONT SUPPORT / LONGITUDINAL FORCE



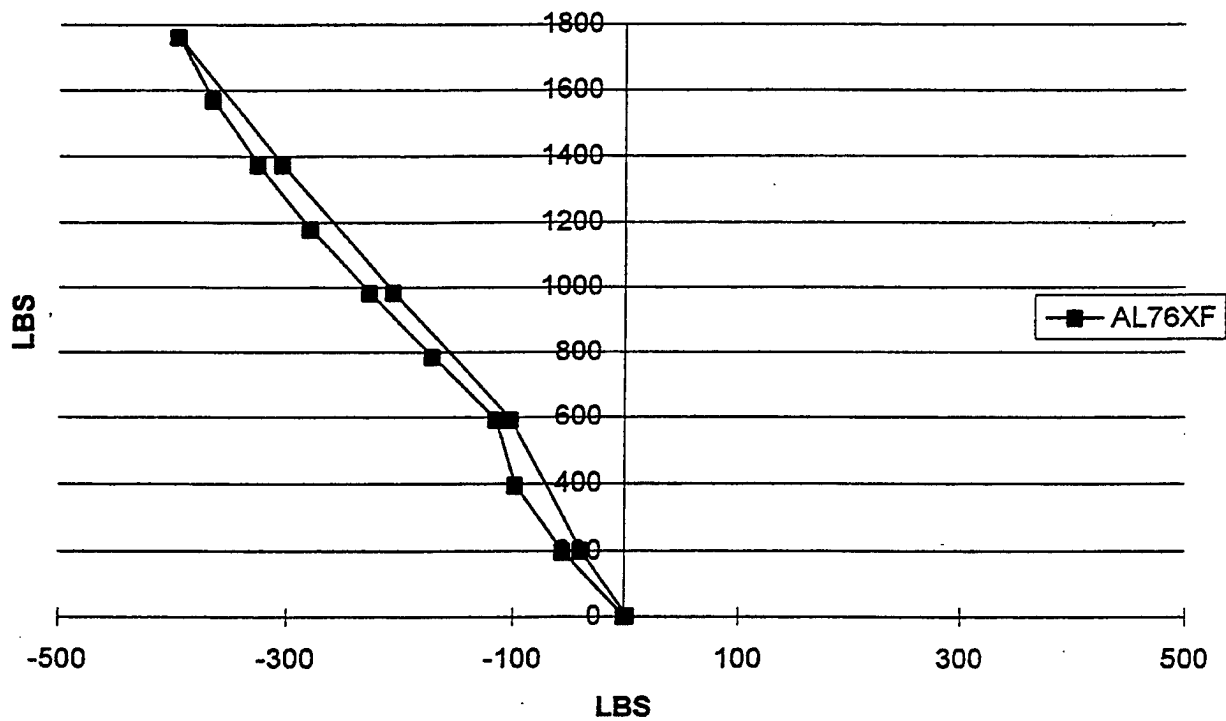
BIN A / CAL 2 LOWER FRONT SUPPORT / LATERAL FORCE



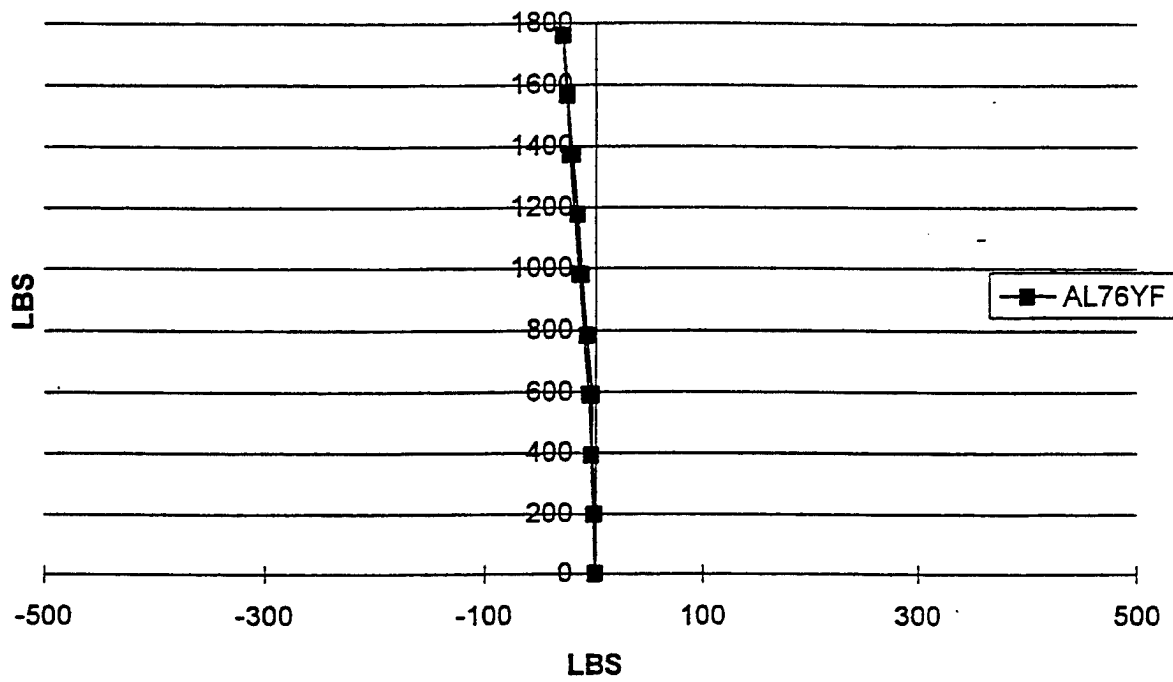
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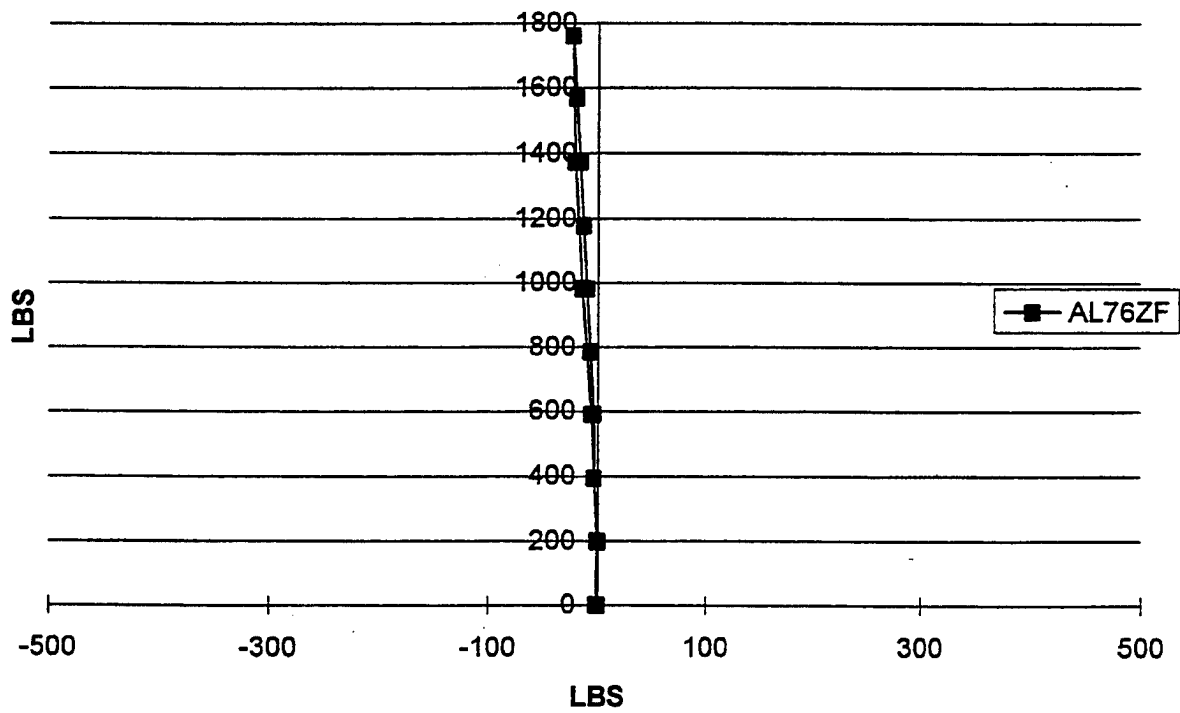
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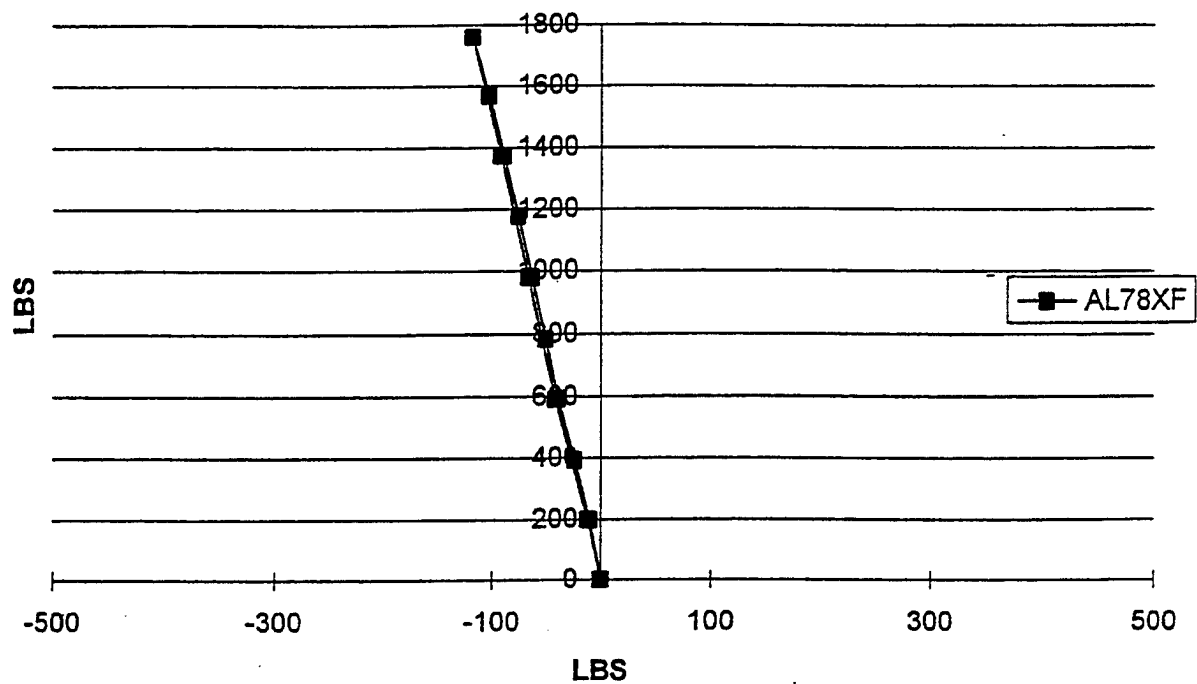
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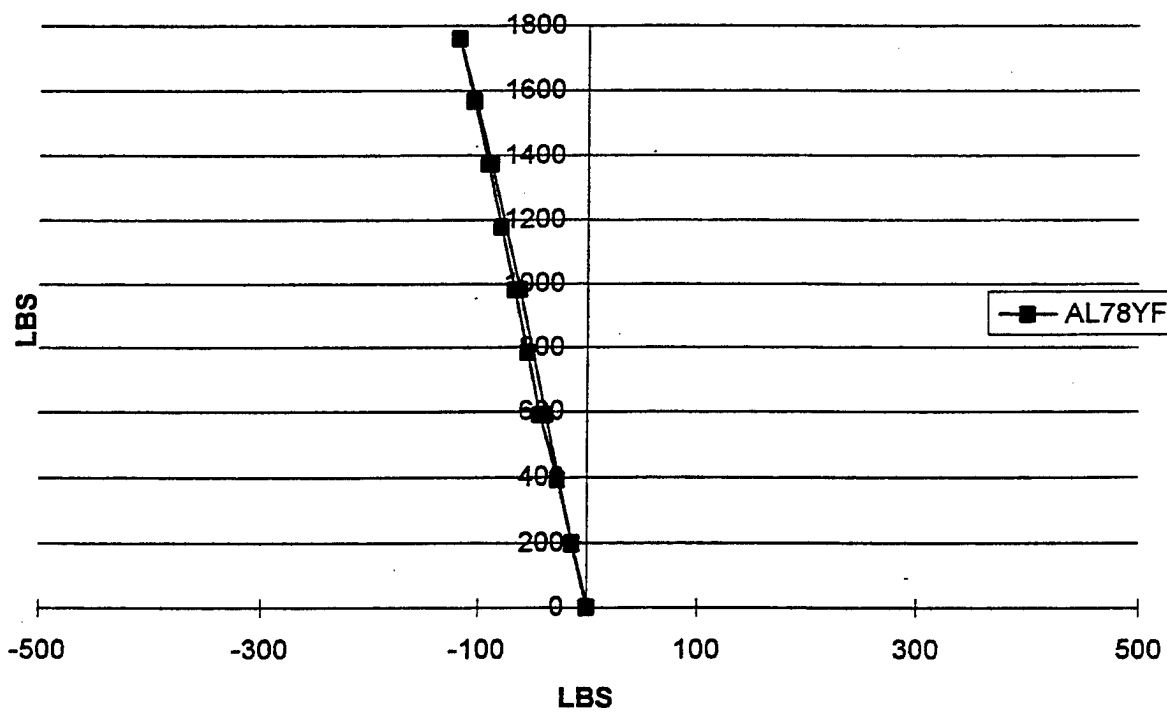
BIN A / CAL 2 LOWER MID SUPPORT / VERTICAL FORCE



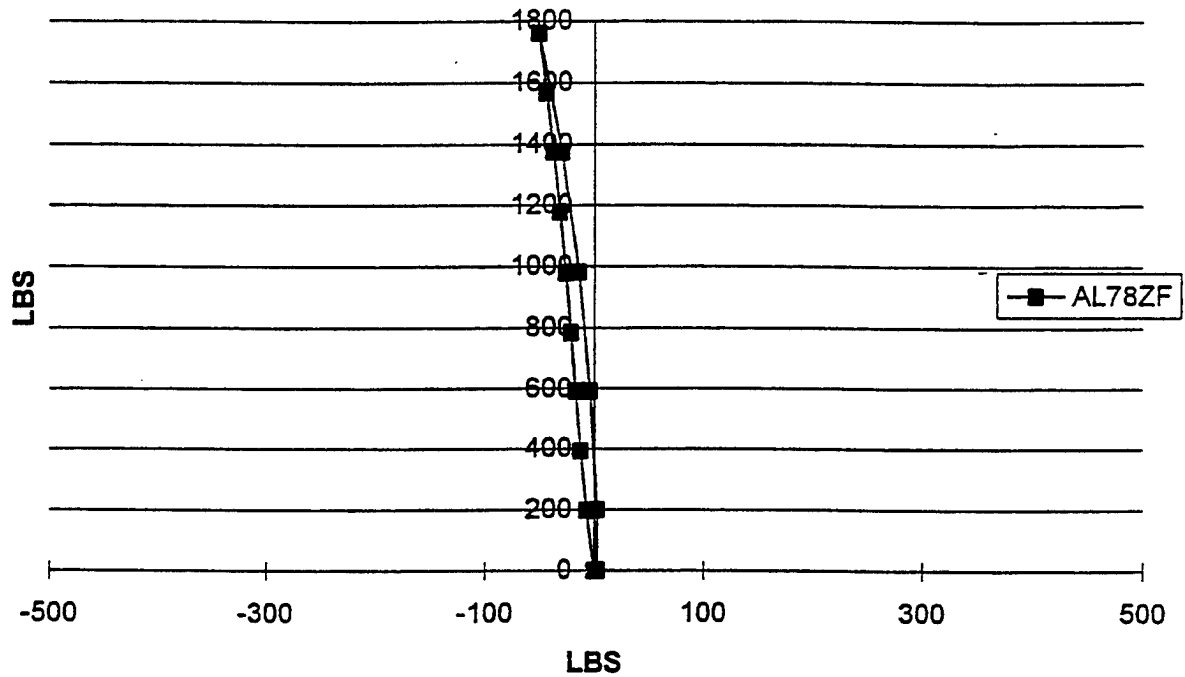
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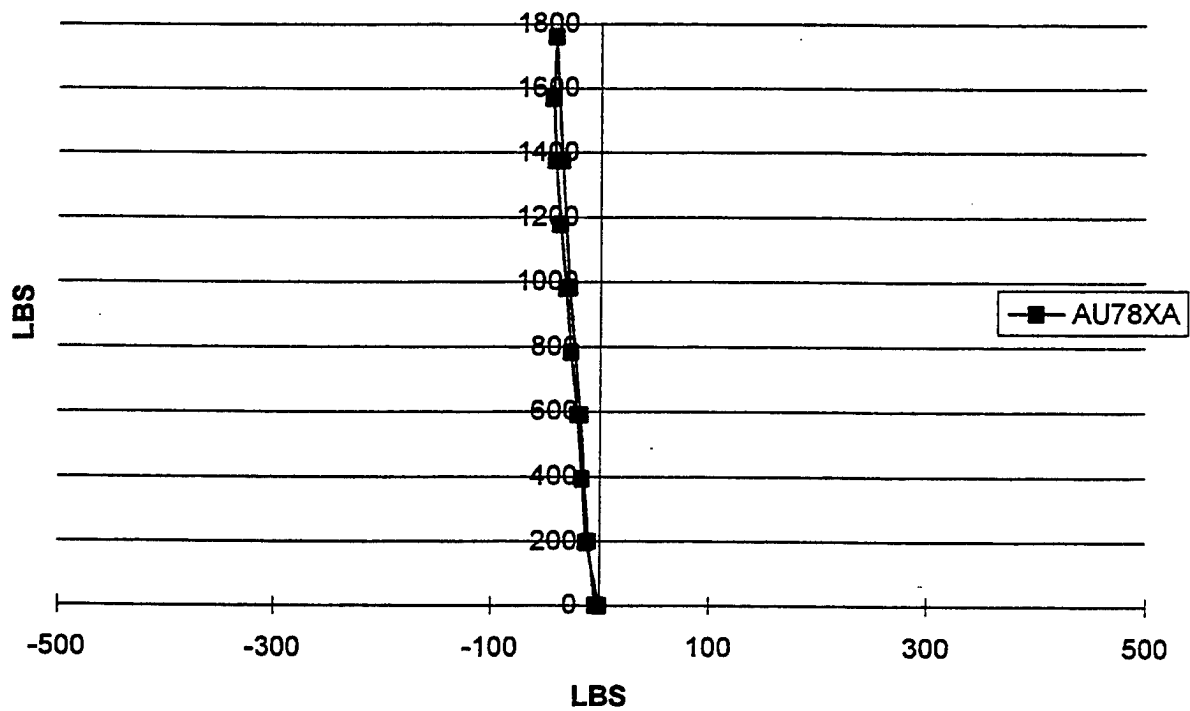
BIN A / CAL 2 LOWER AFT SUPPORT / LATERAL FORCE



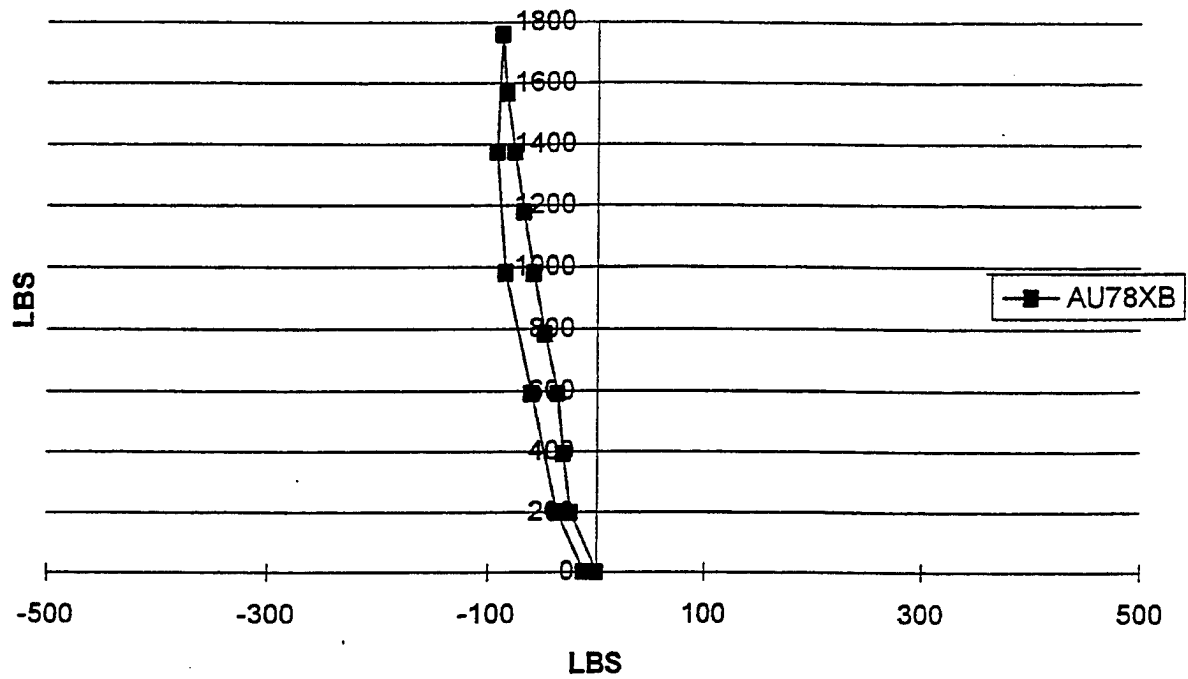
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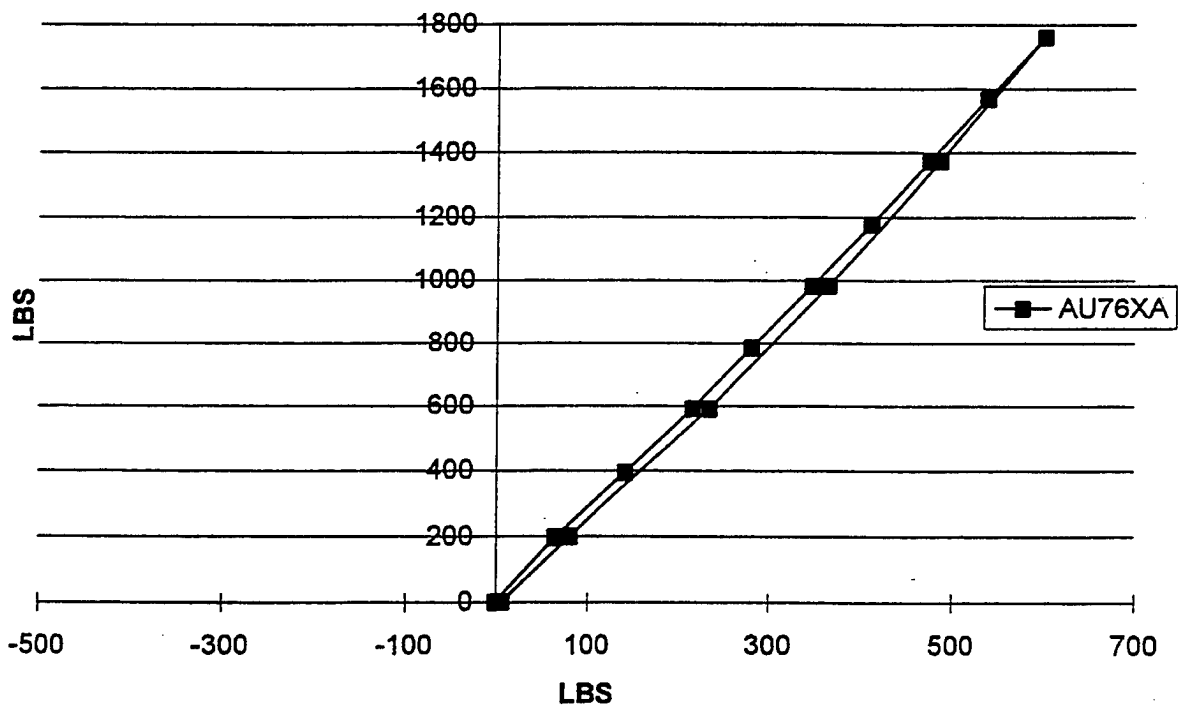
BIN A / CAL 2 UPPER FRONT SUPPORT / INNER LONGITUDINAL FORCE



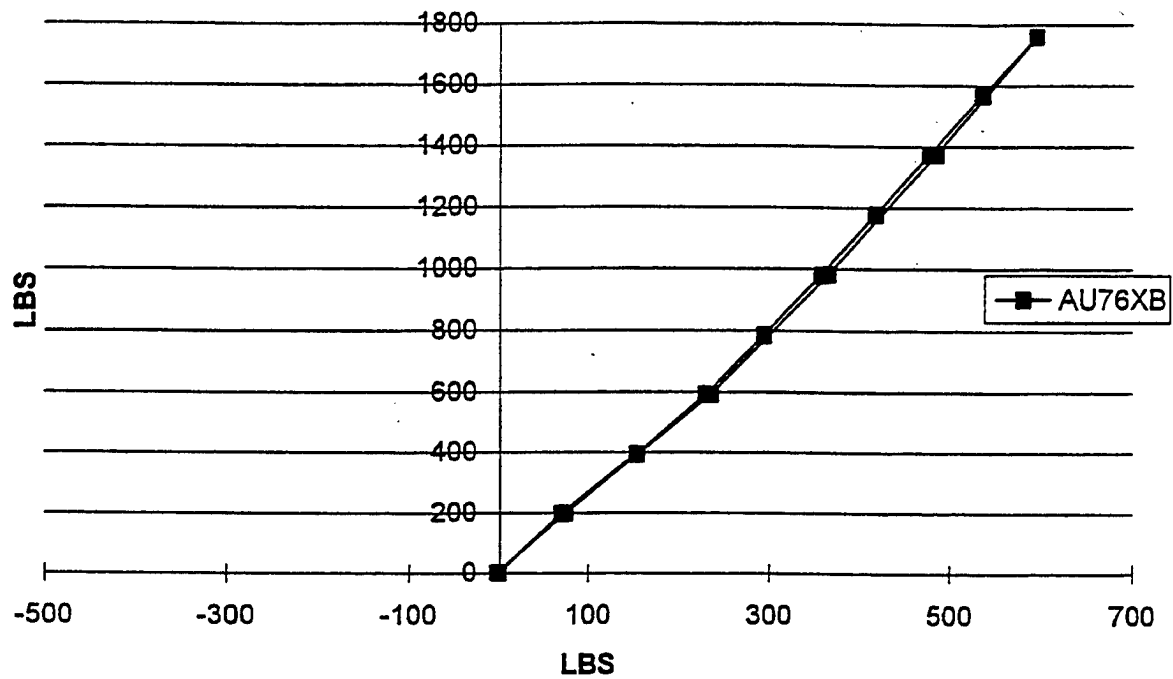
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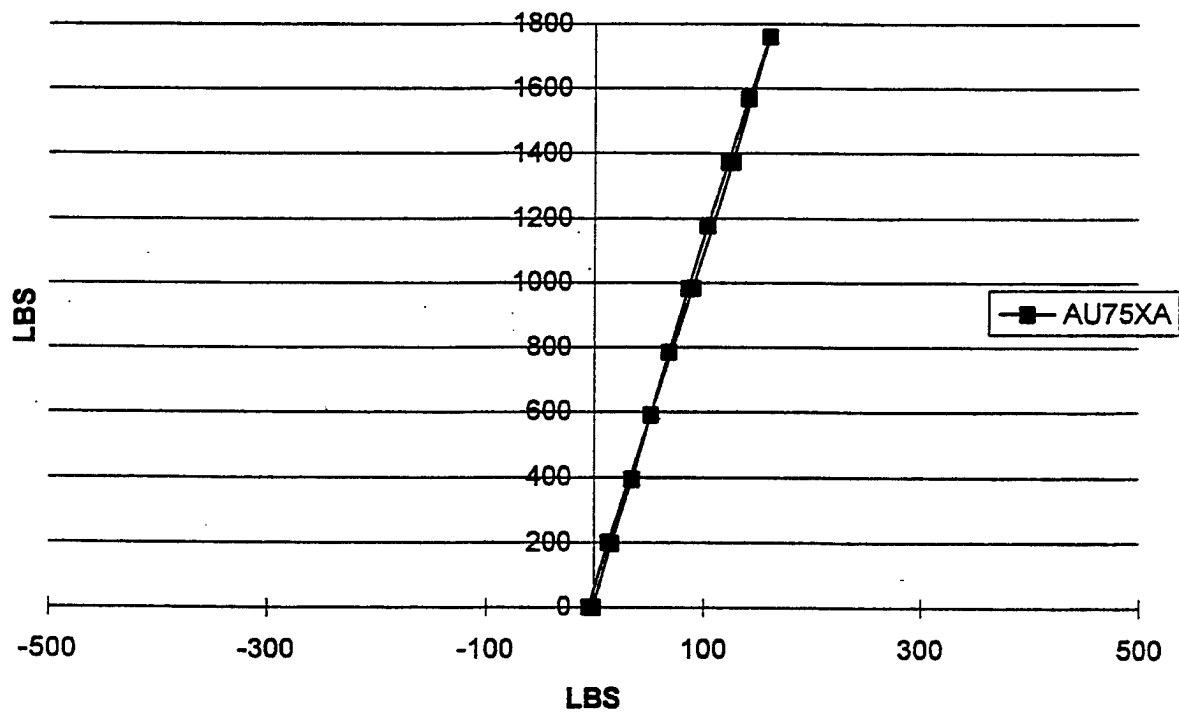
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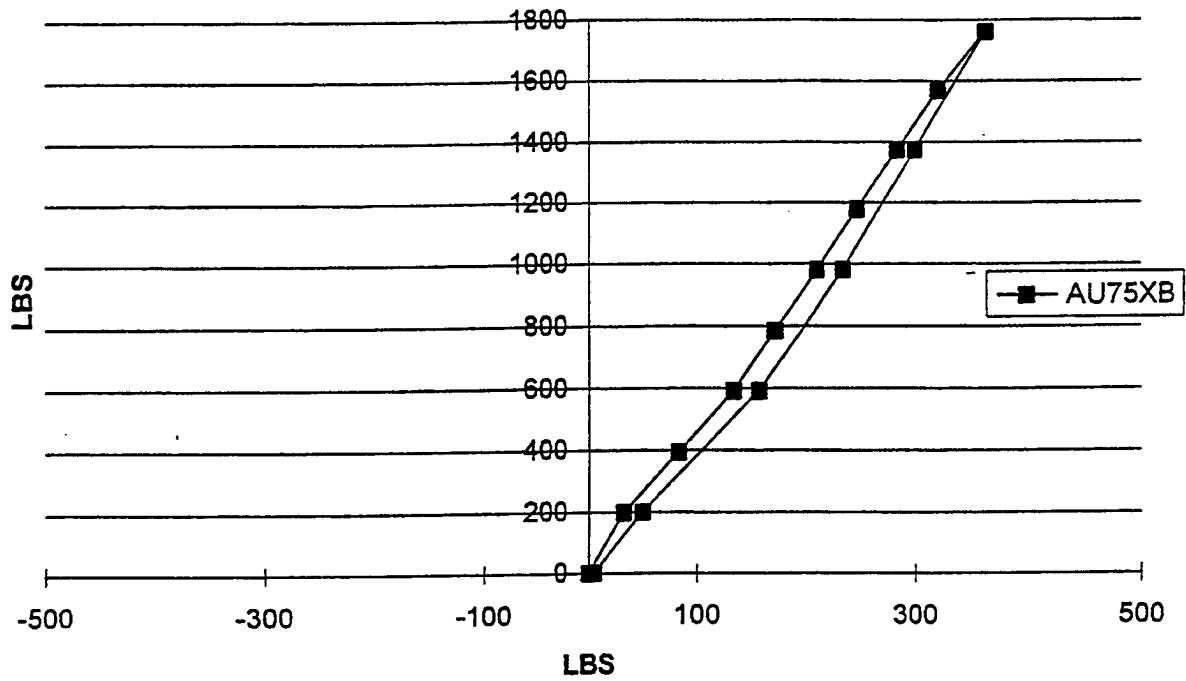
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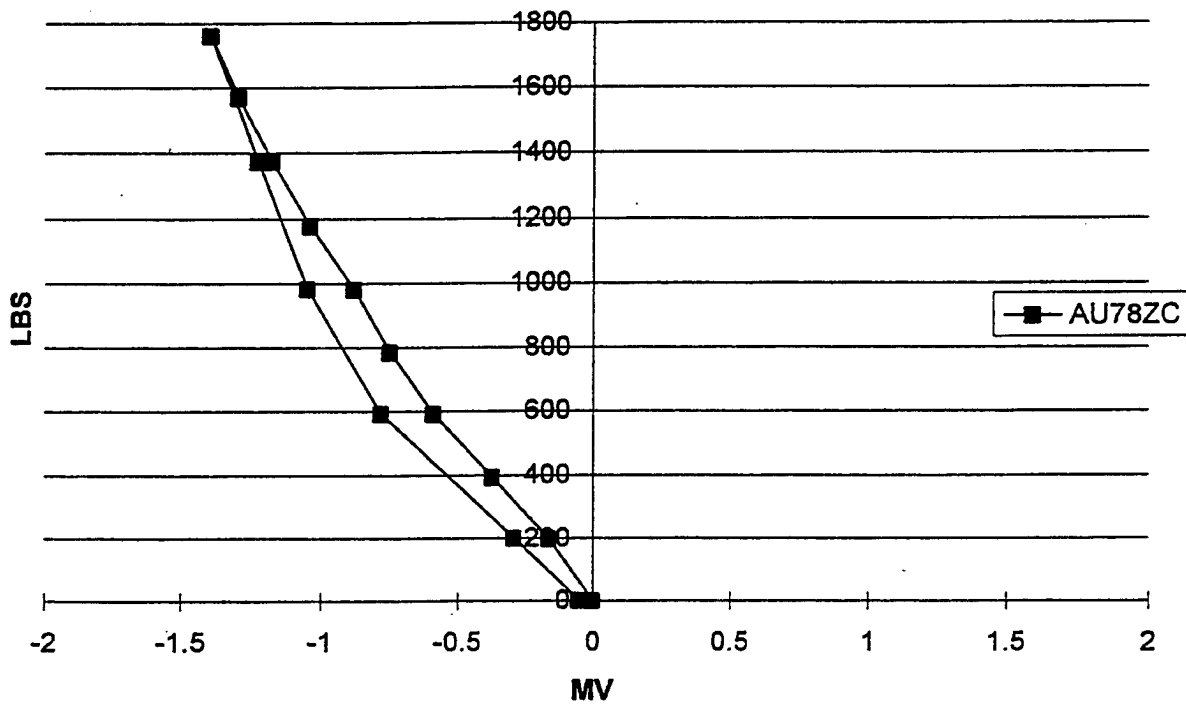
BIN A / CAL 2 UPPER AFT SUPPORT / INNER LONGITUDINAL FORCE



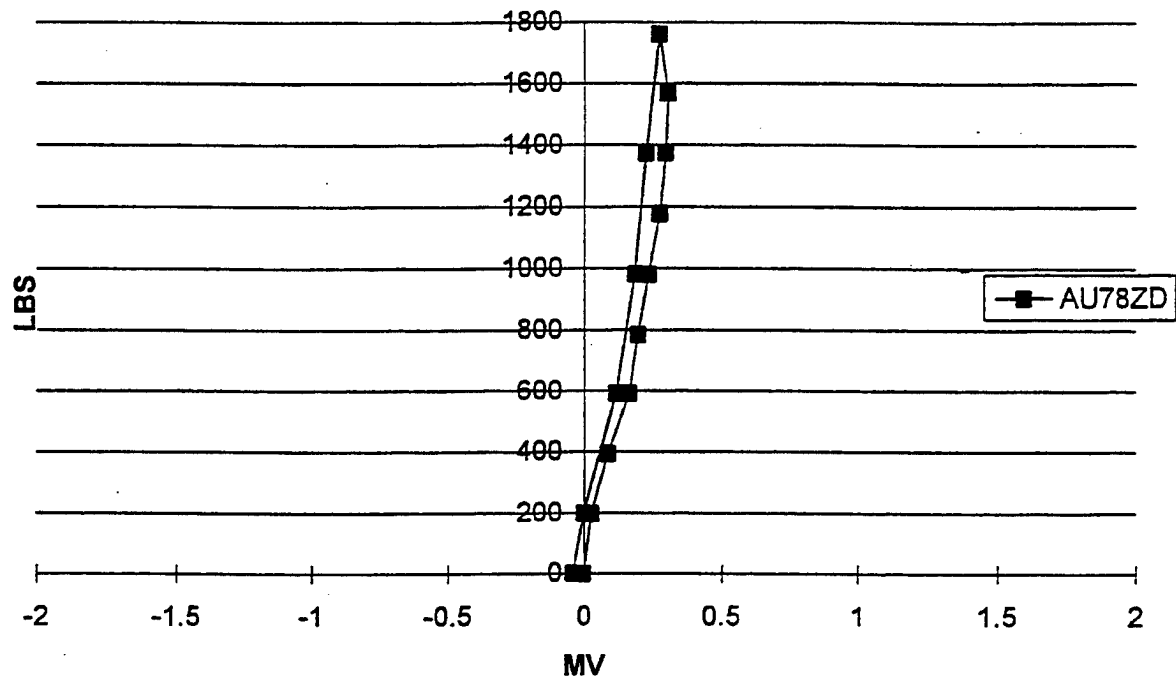
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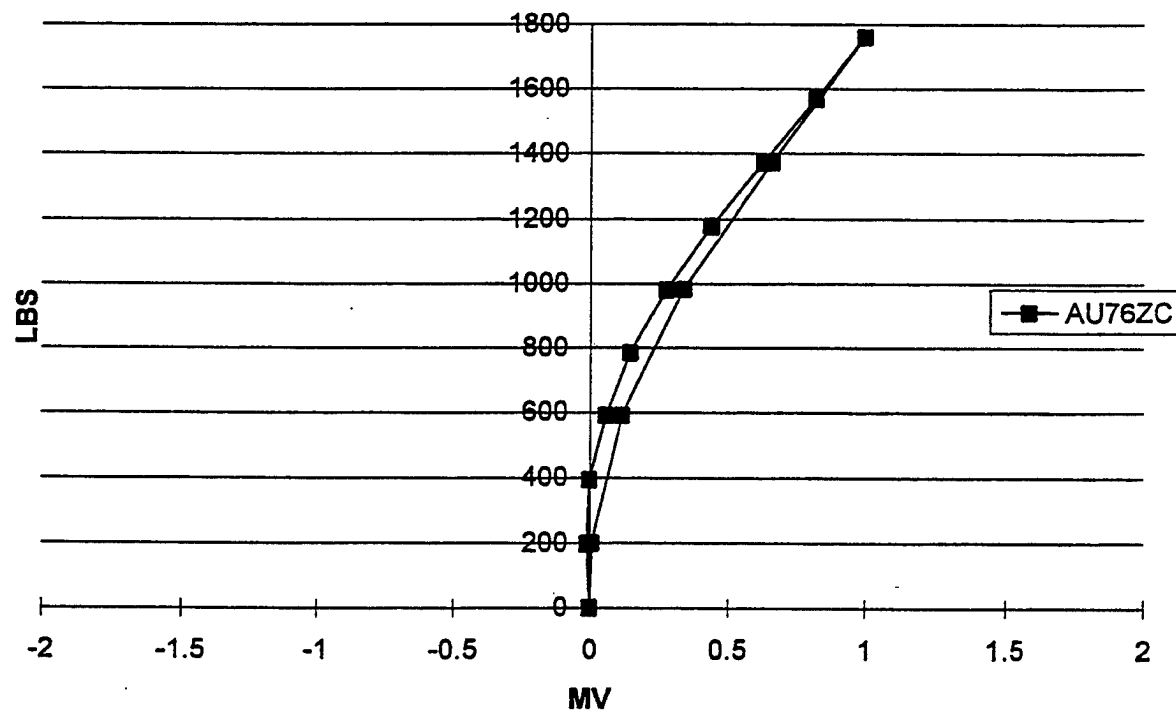
BIN A / CAL 2 UPPER FRONT SUPPORT / OUTER VERTICAL MV



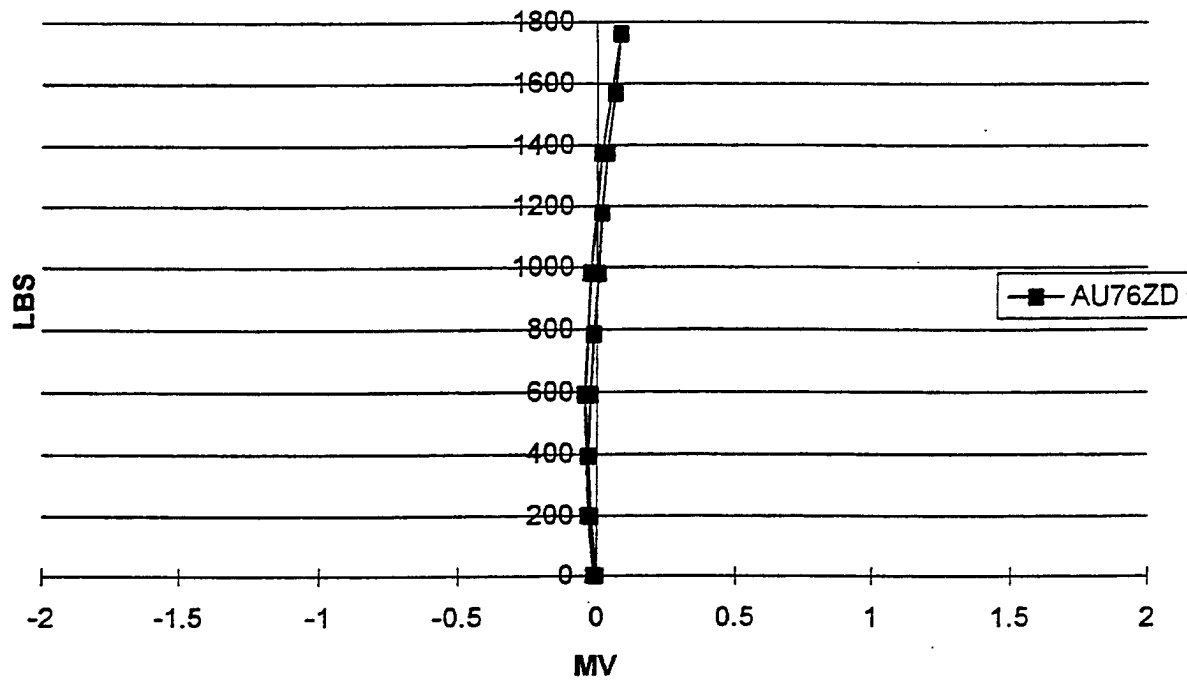
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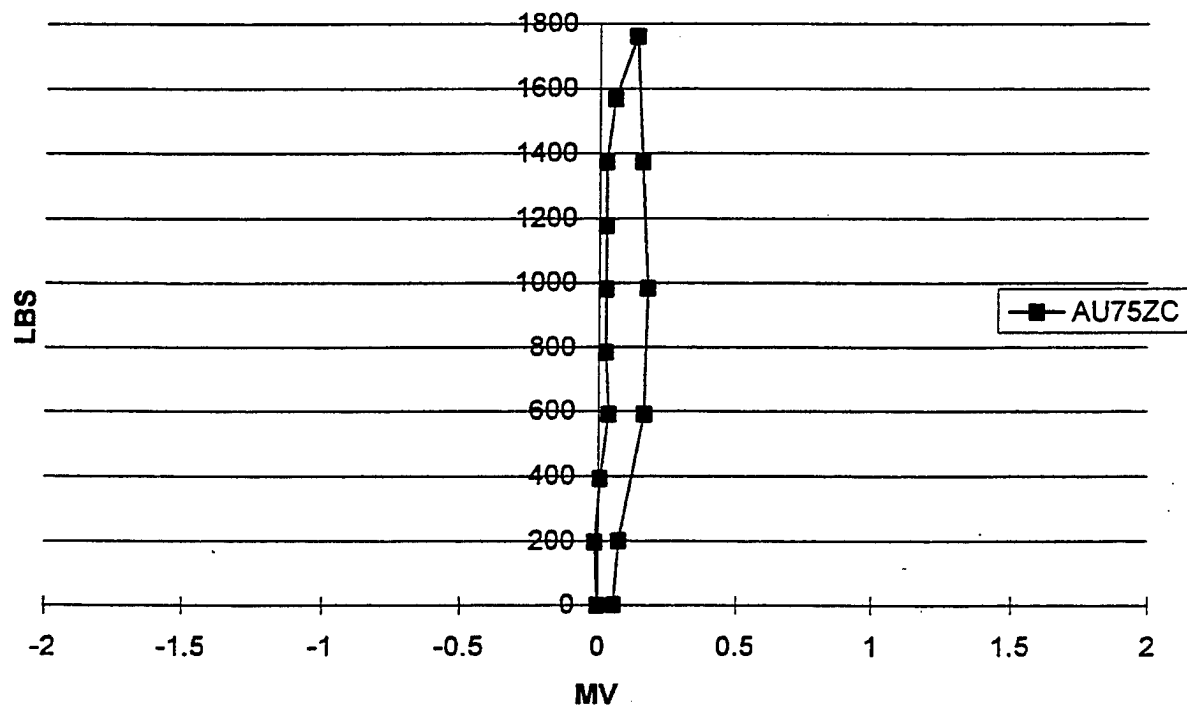
BIN A / CAL 2 UPPER MID SUPPORT / OUTER VERTICAL MV



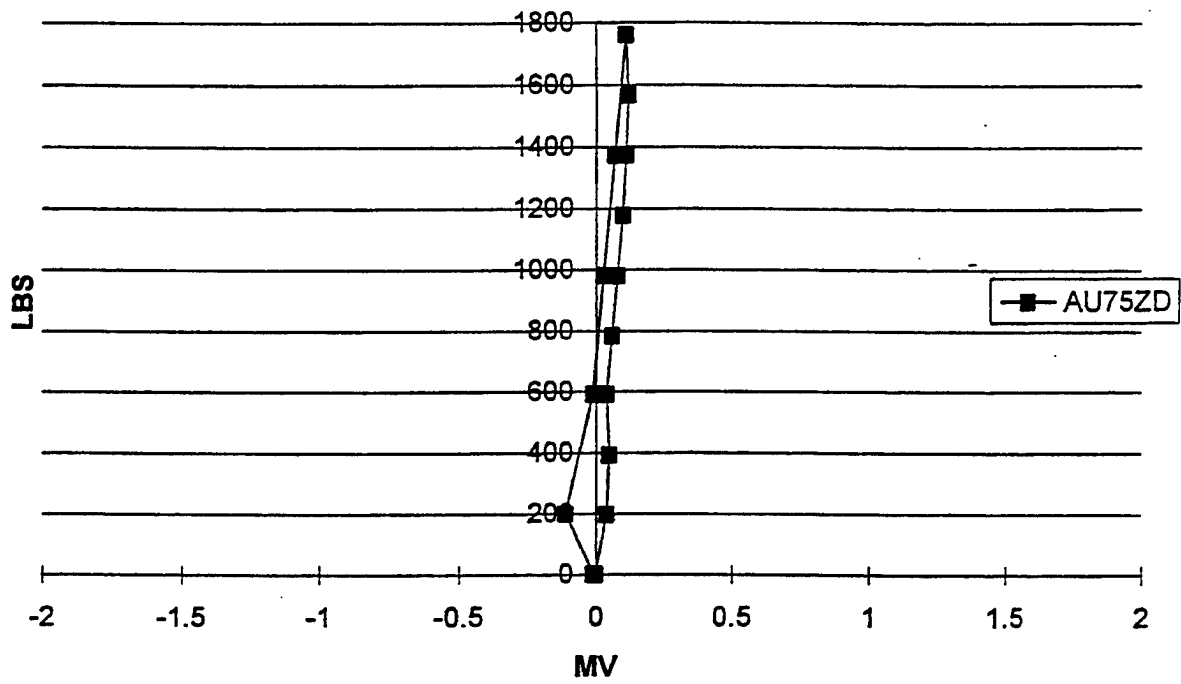
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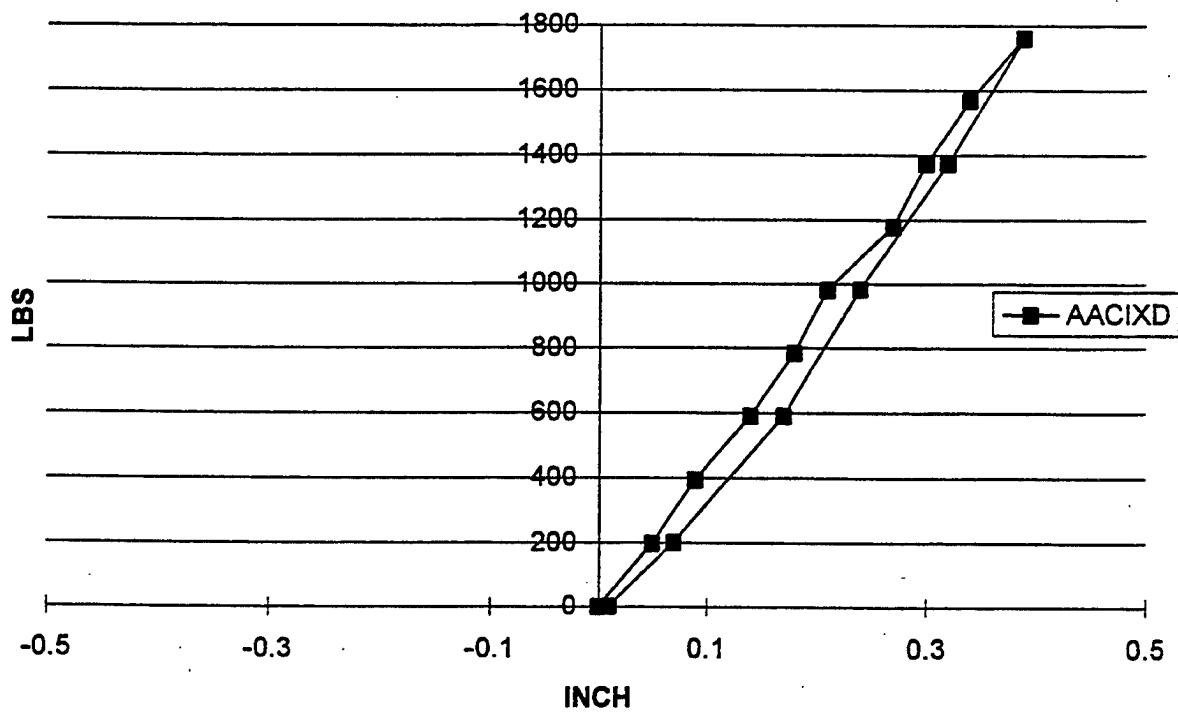
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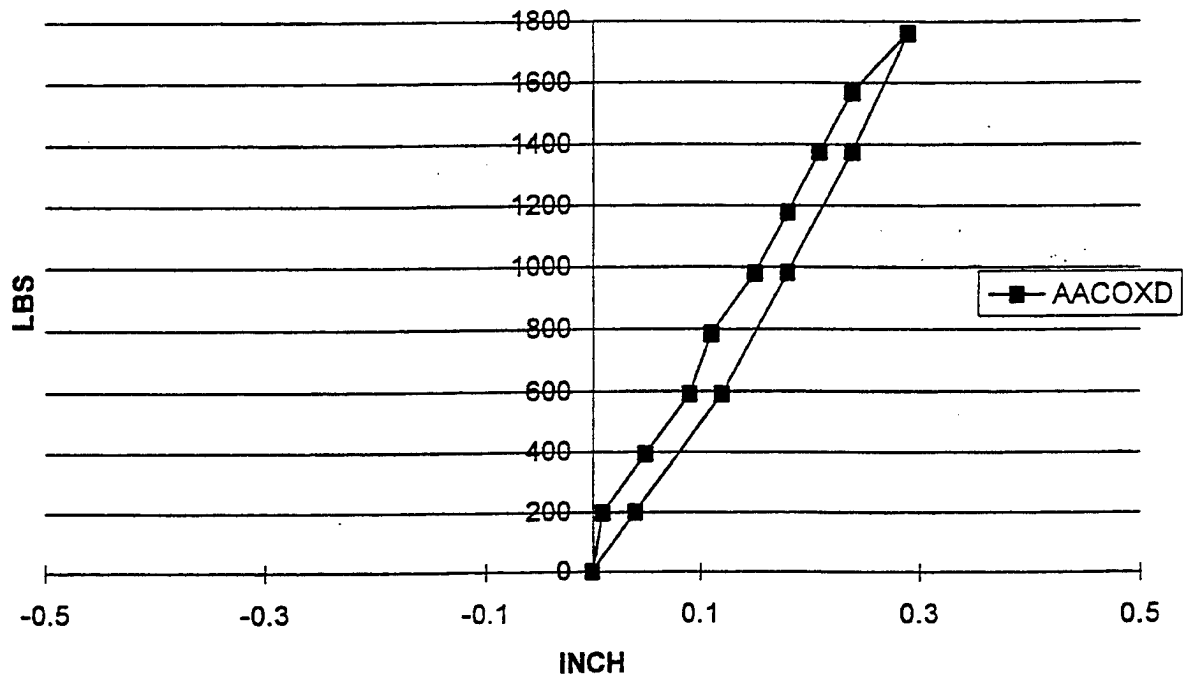
BIN A / CAL 2 UPPER AFT SUPPORT / INNER VERTICAL MV



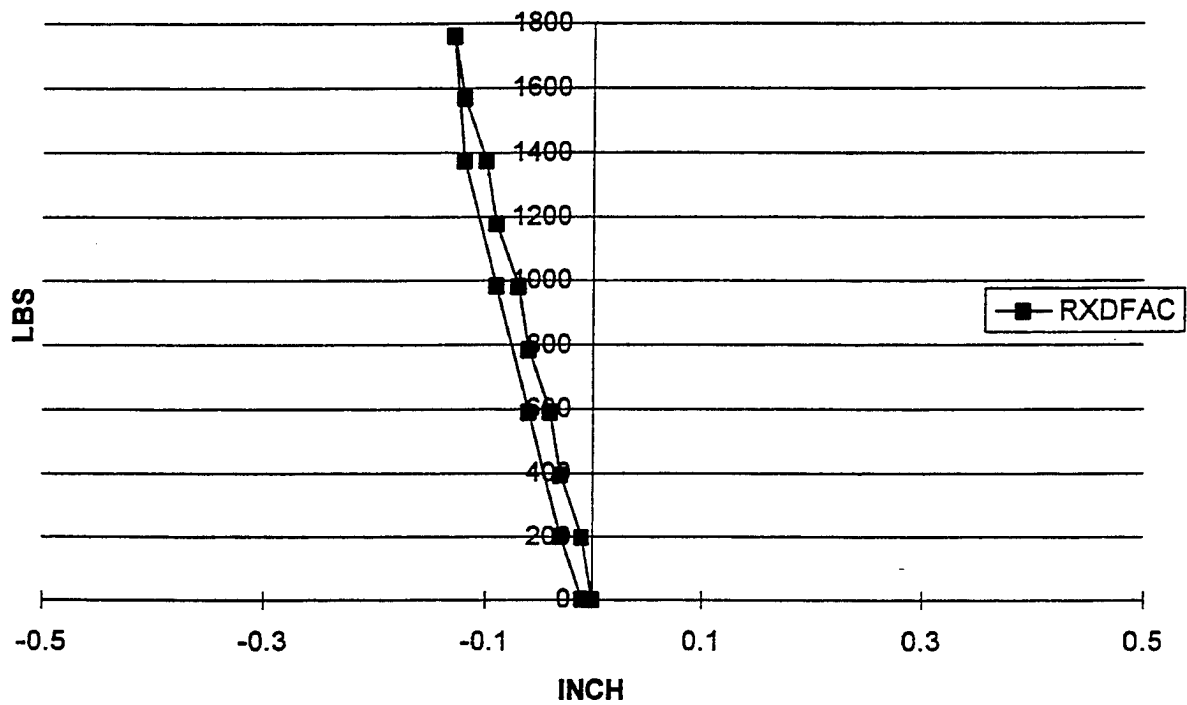
BIN A / CAL 2 AFT COMPARTMENT / INNER LONGITUDINAL DISPLACEMENT



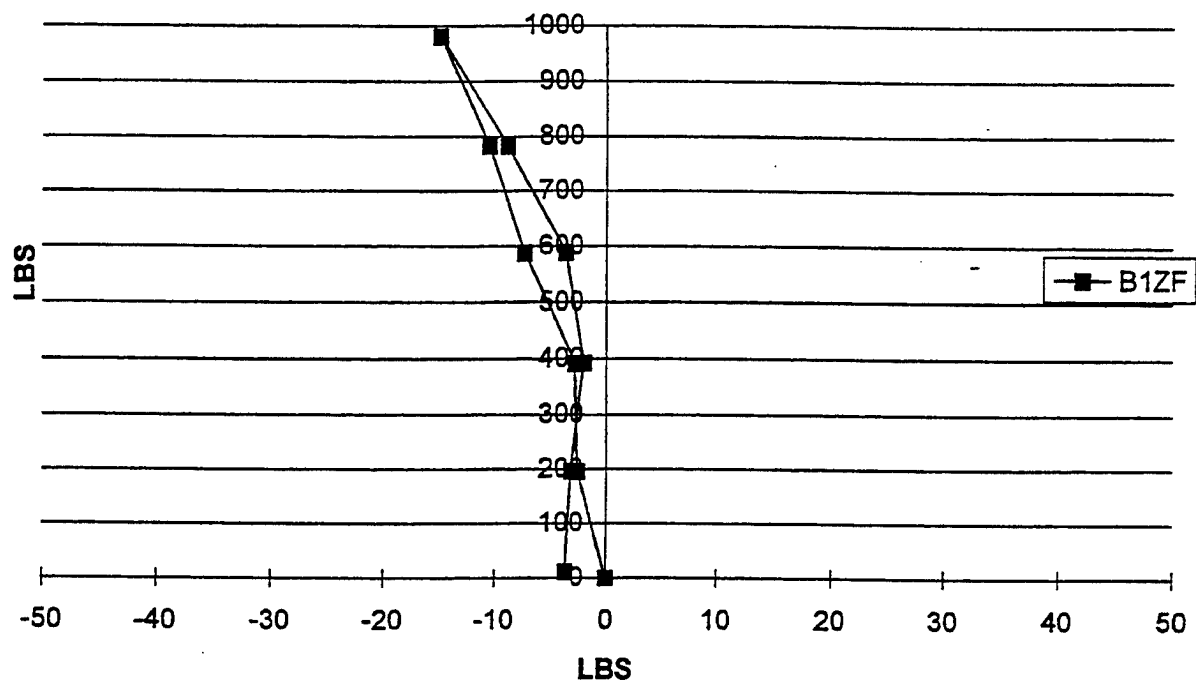
BIN A / CAL 2 AFT COMPARTMENT / OUTER LONGITUDINAL DISPLACEMENT



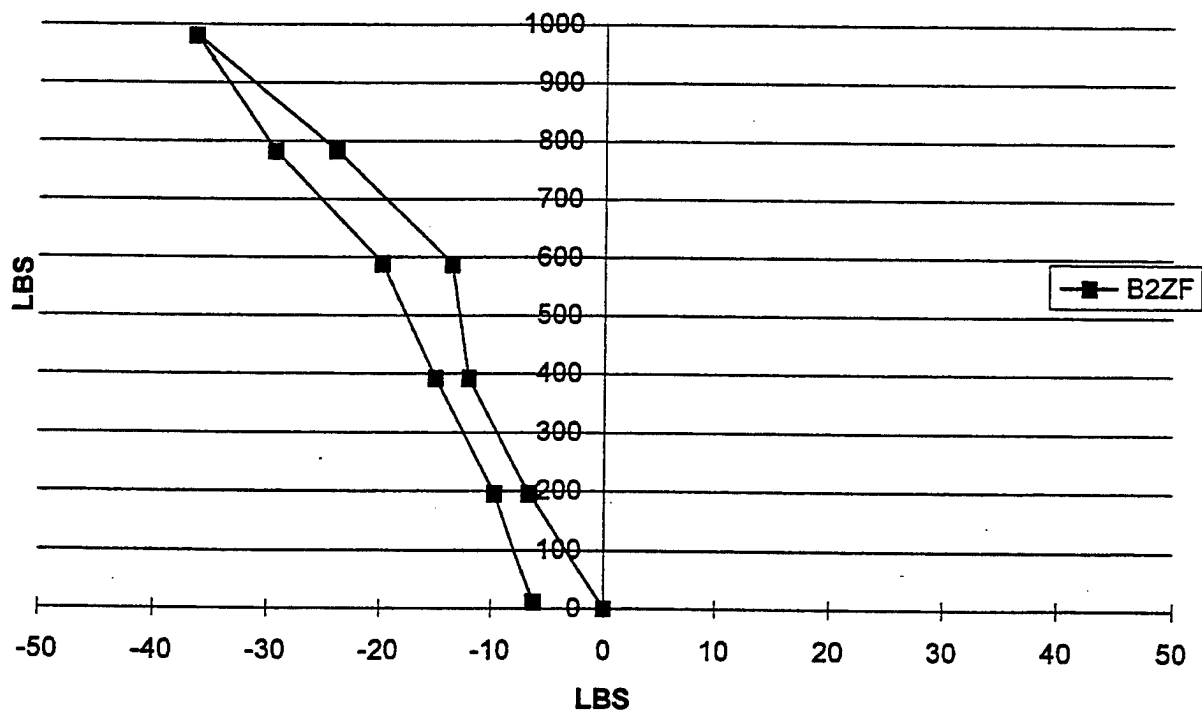
BIN A / CAL 2 RELATIVE LONGITUDINAL DISPLACEMENT FROM FRONT-TO-AFT COMPARTMENTS / MID



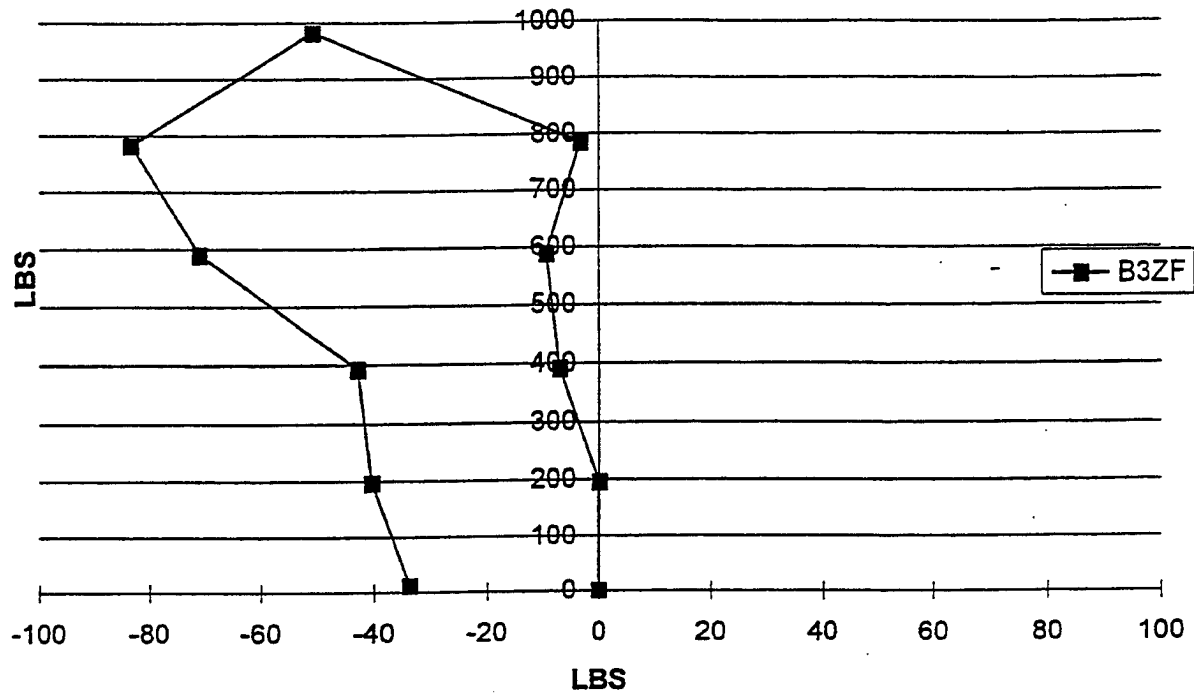
BIN B / CAL 1 HPD9 70066-7 / AFT SUPPORT 1 / VERTICAL FORCE



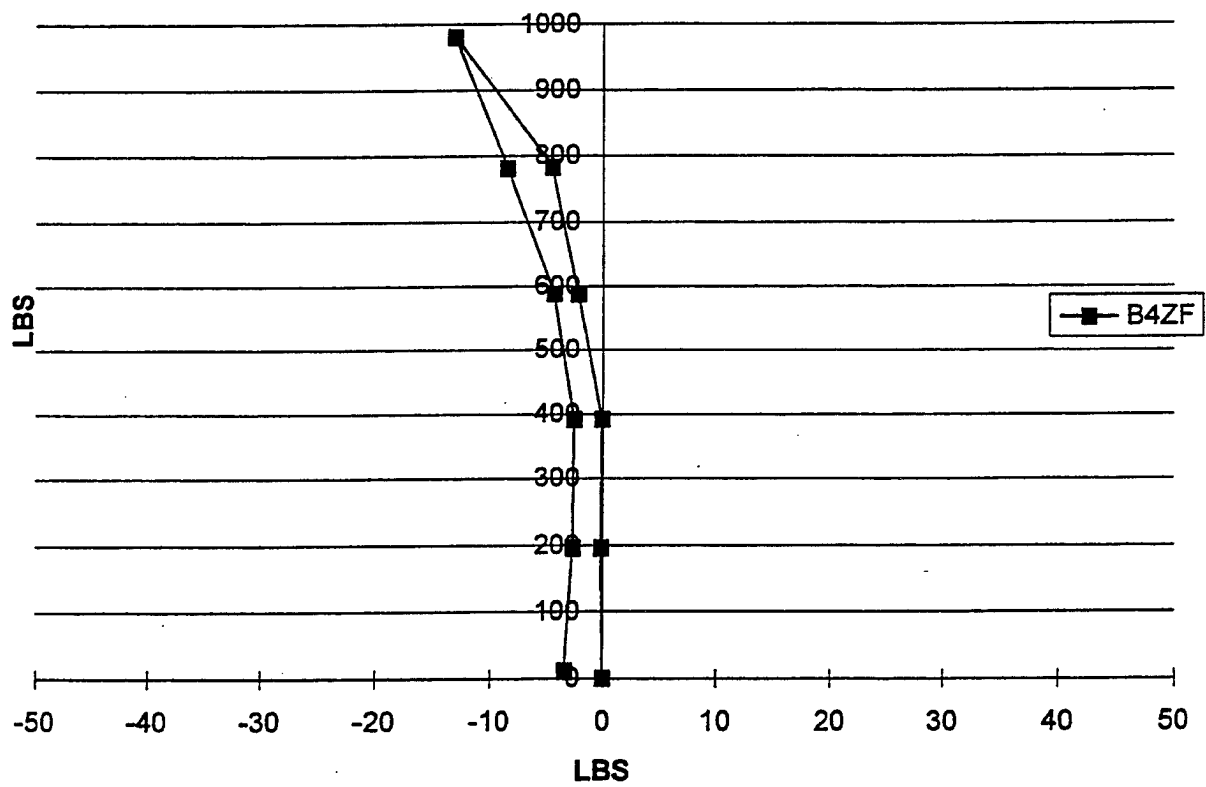
BIN B / CAL 1 HPD9 70066-7 / FWD SUPPORT 2 / VERTICAL FORCE



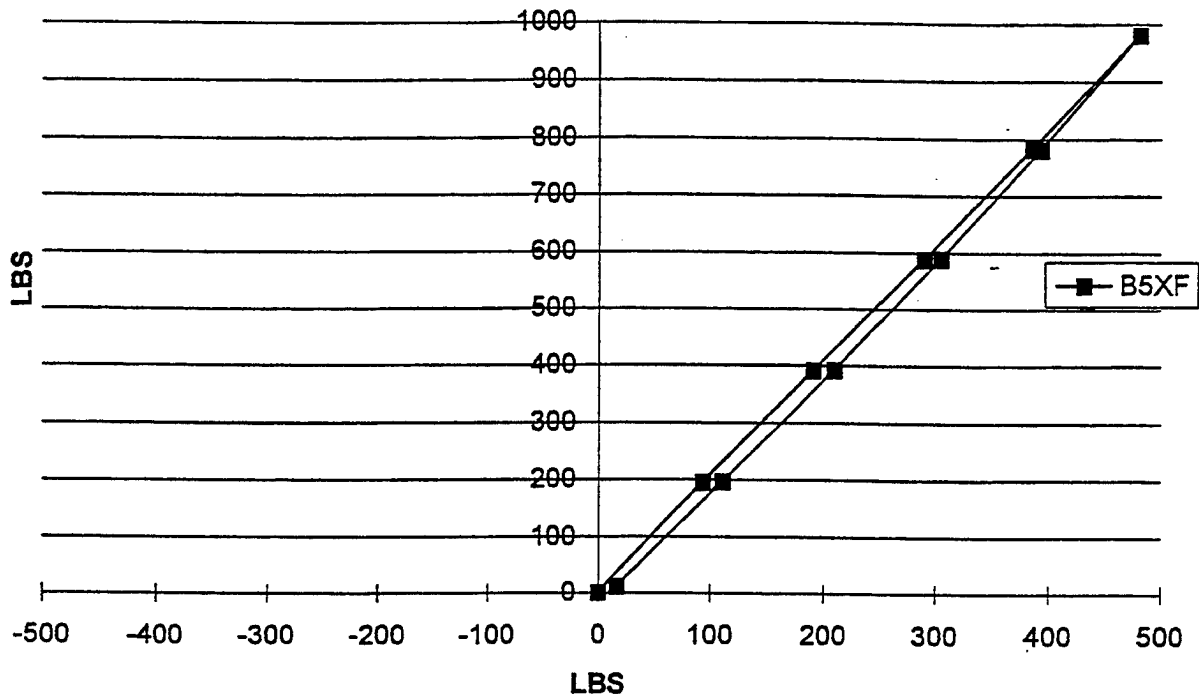
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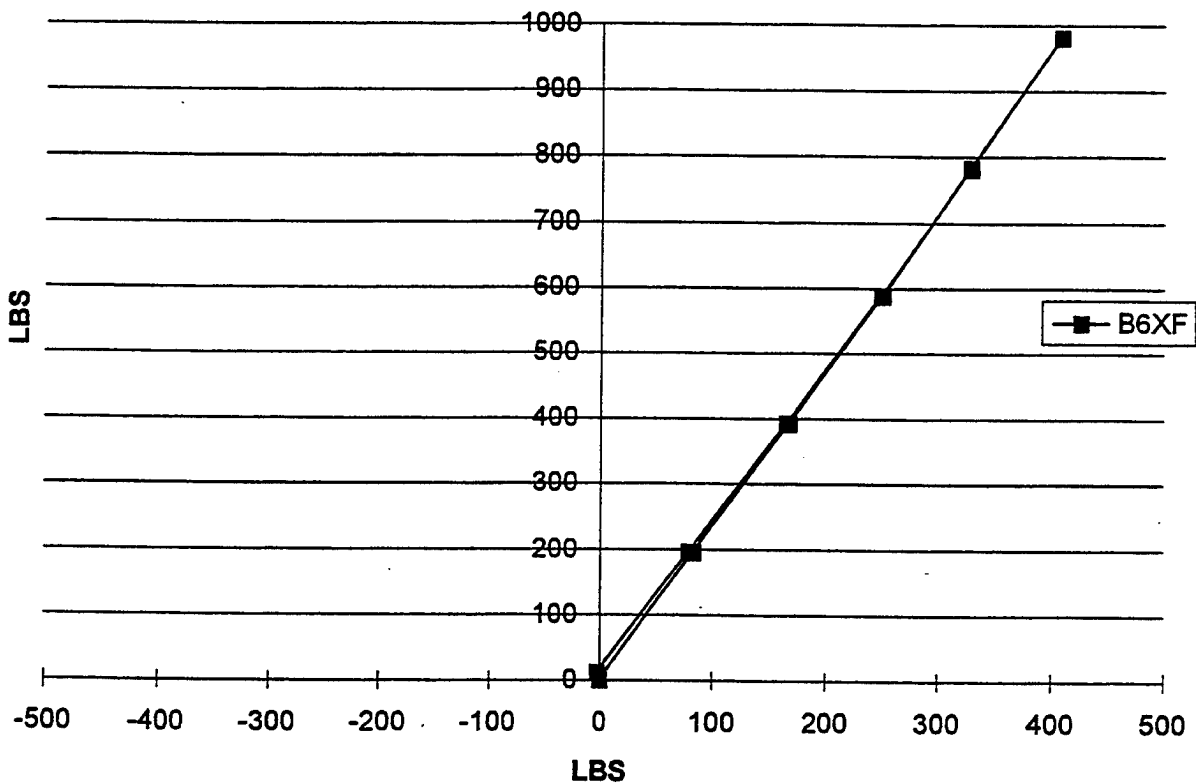
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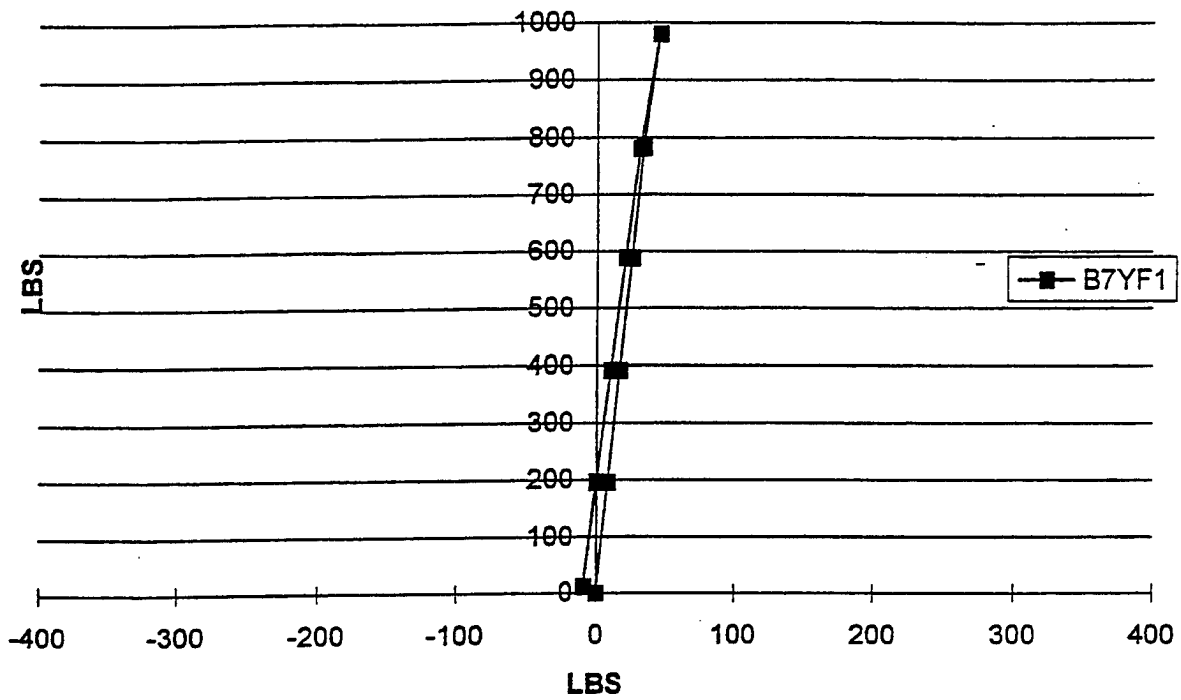
BIN B / CAL 1 HPD5 70060-159 / AFT PLATE SUPPORT 5 / LONGITUDINAL FORCE



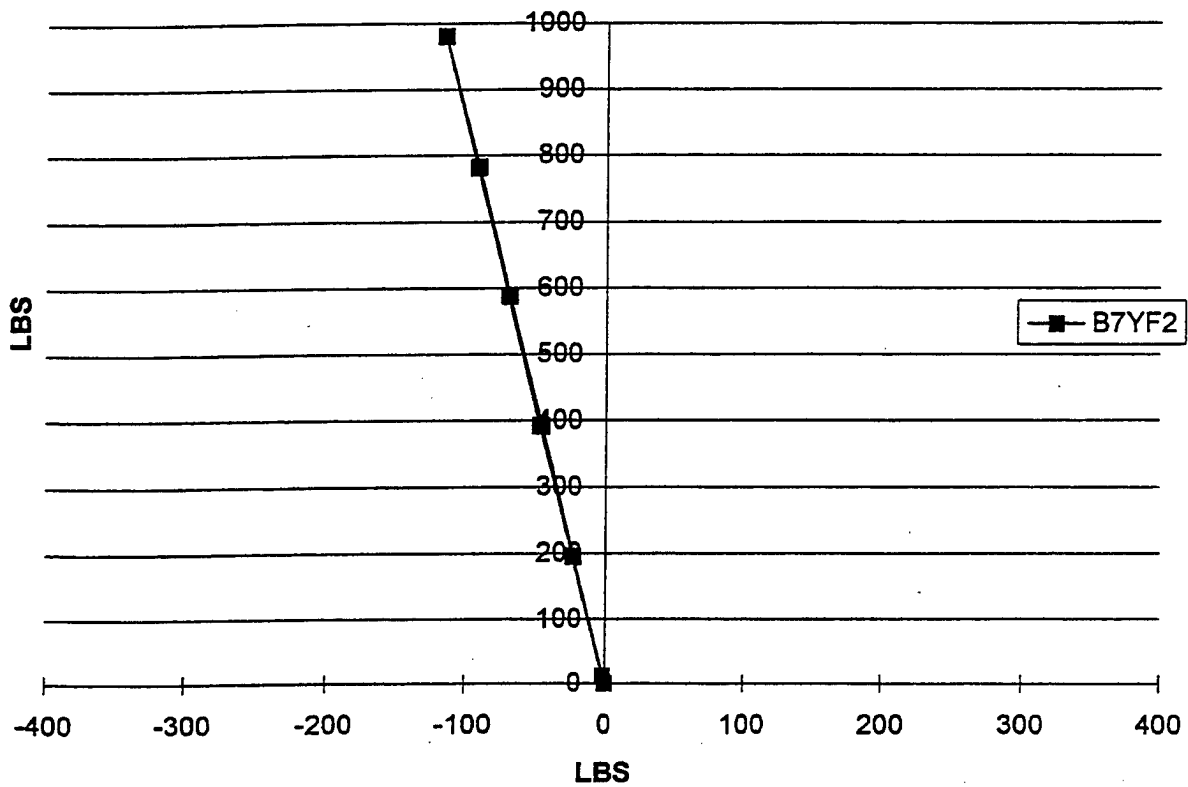
BIN B / CAL 1 HPD5 70060-159 / FWD PLATE SUPPORT 6 / LONGITUDINAL FORCE



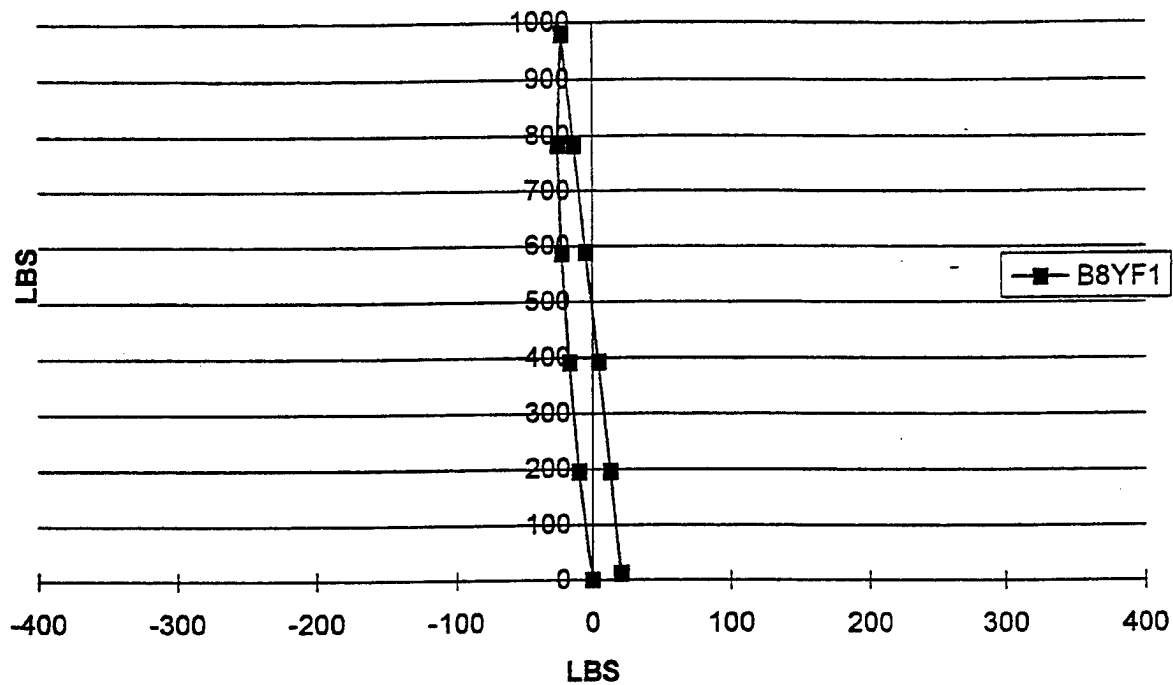
BIN B / CAL 1 HPD5 70041-46 / L SUPPORT 7 / GAGE 1 (LOWER) /
LATERAL FORCE



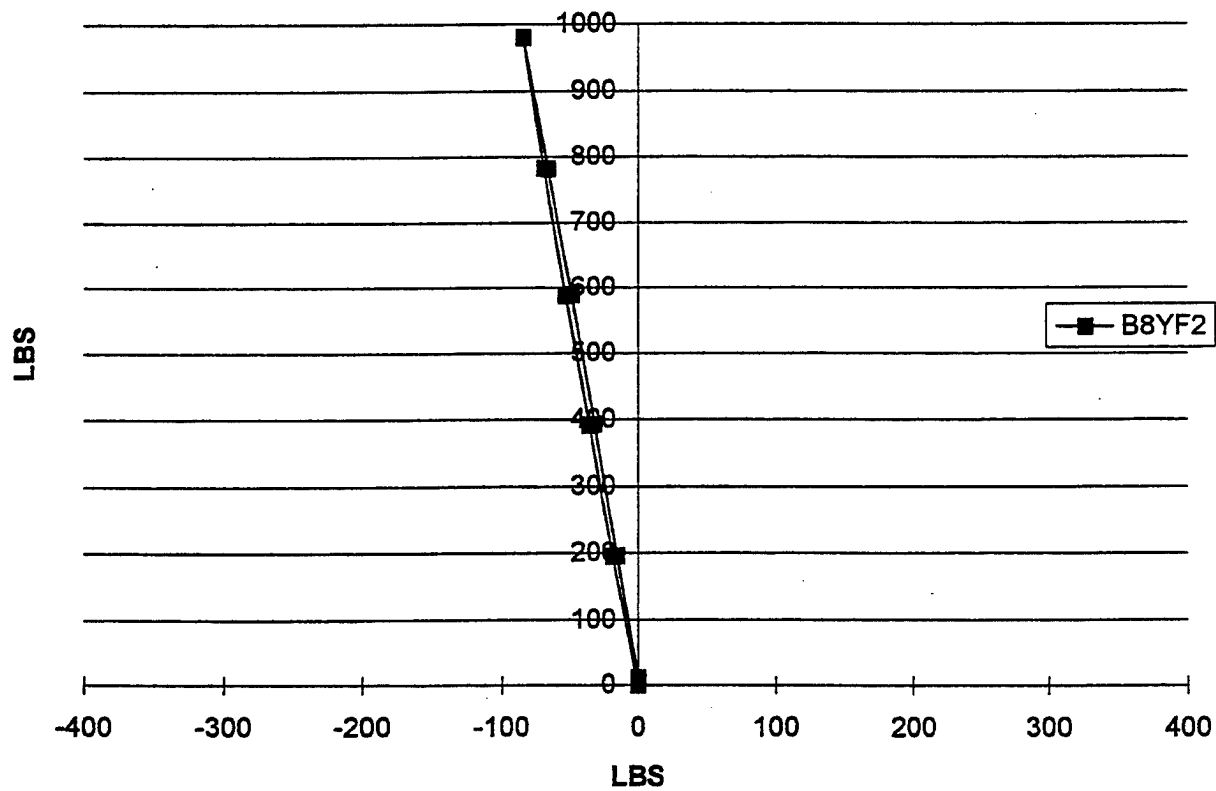
BIN B / CAL 1 HPD5 70041-46 / L SUPPORT 7 / GAGE 2 (UPPER) / LATERAL FORCE



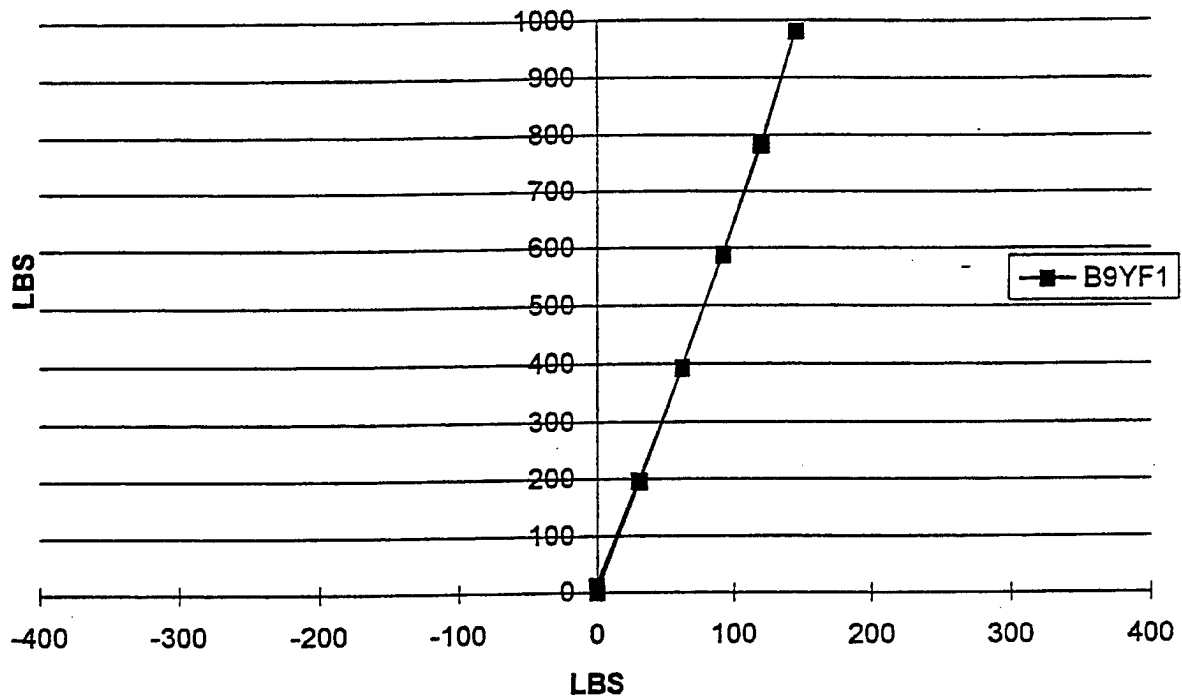
BIN B / CAL 1 HPD5 70041-46 / L SUPPORT 8 / GAGE 1 (LOWER) / LATERAL FORCE



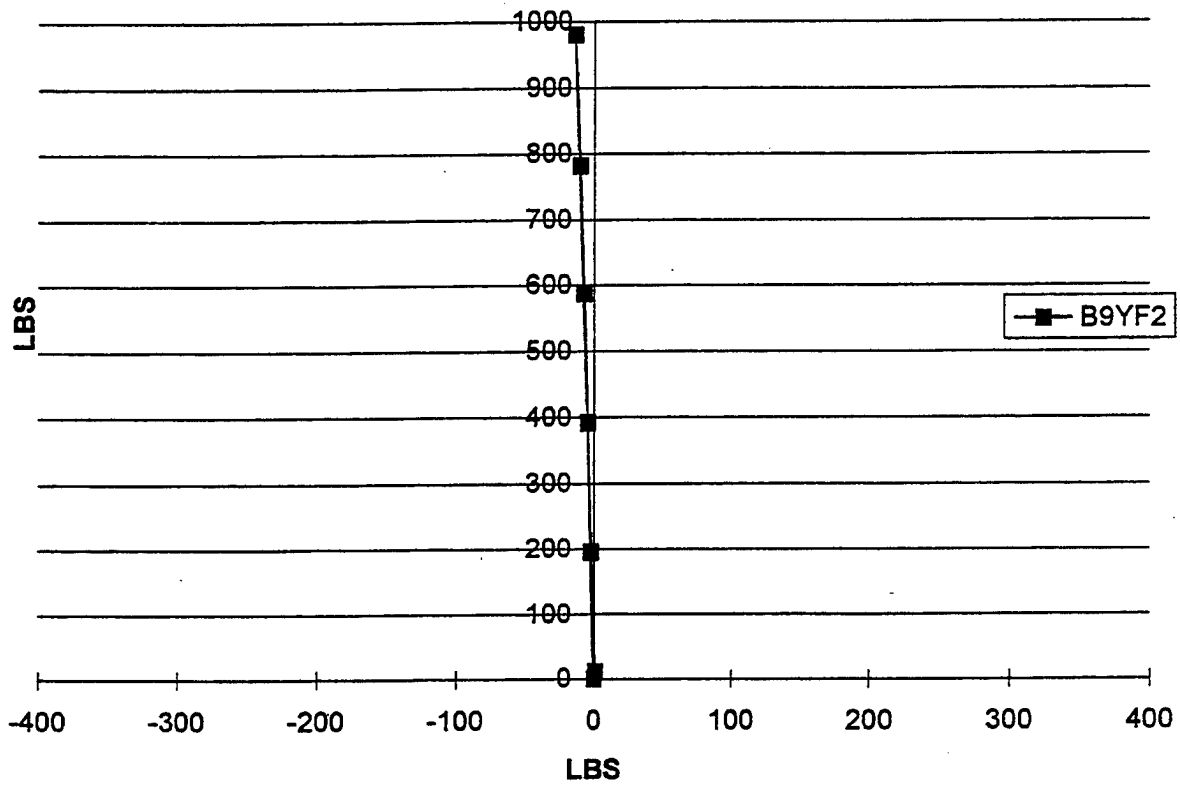
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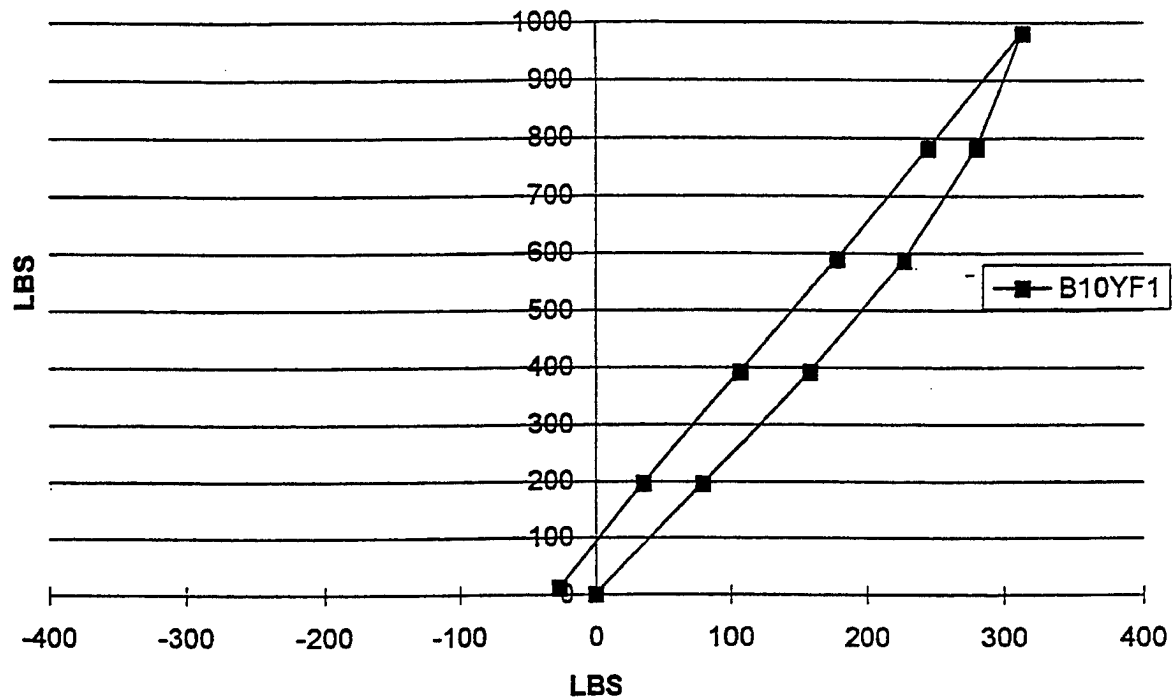
BIN B / CAL 1 HPD5 70041-46 / L SUPPORT 9 / GAGE 1 (LOWER) / LATERAL FORCE



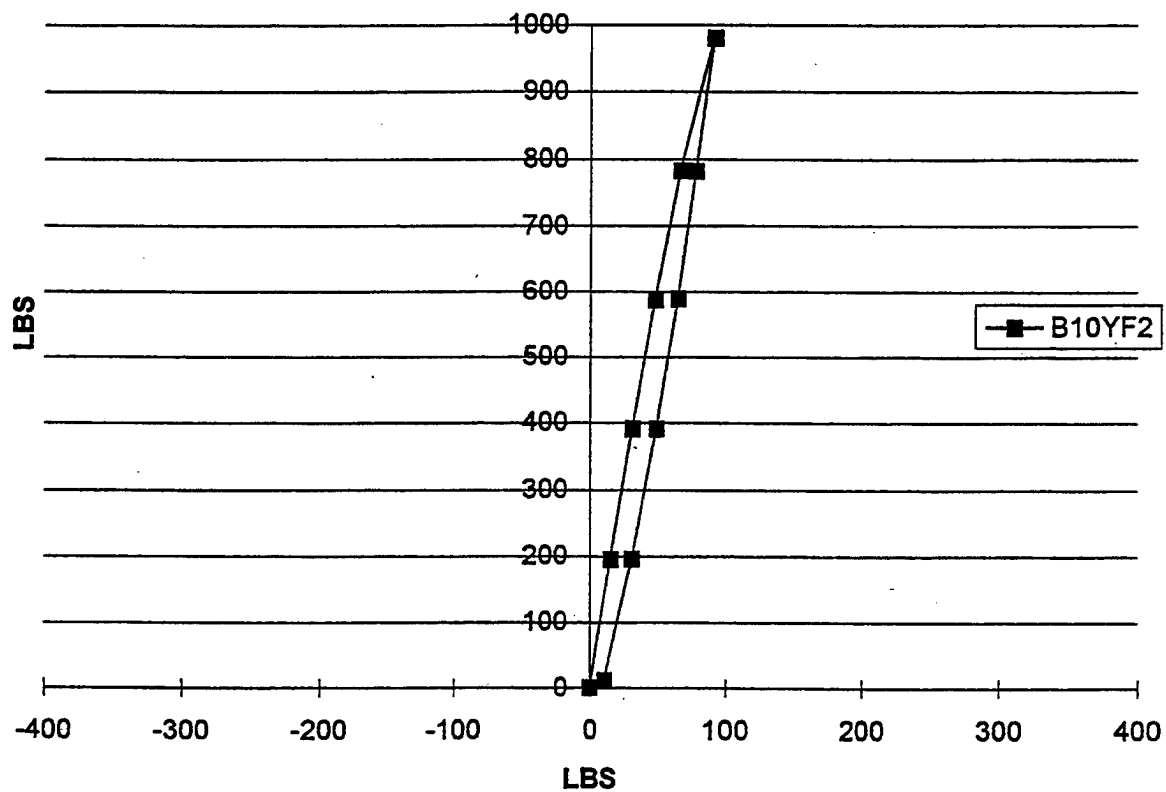
BIN B / CAL 1 HPD5 70041-46 / L SUPPORT 9 / GAGE 2 (UPPER) / LATERAL FORCE



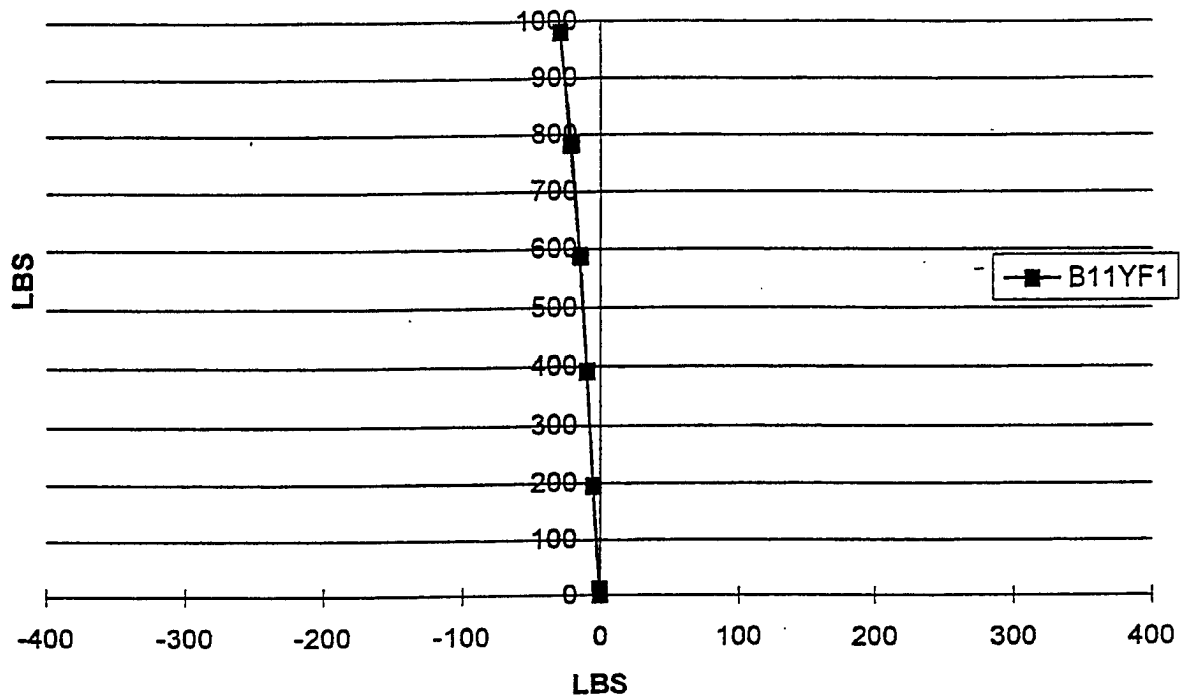
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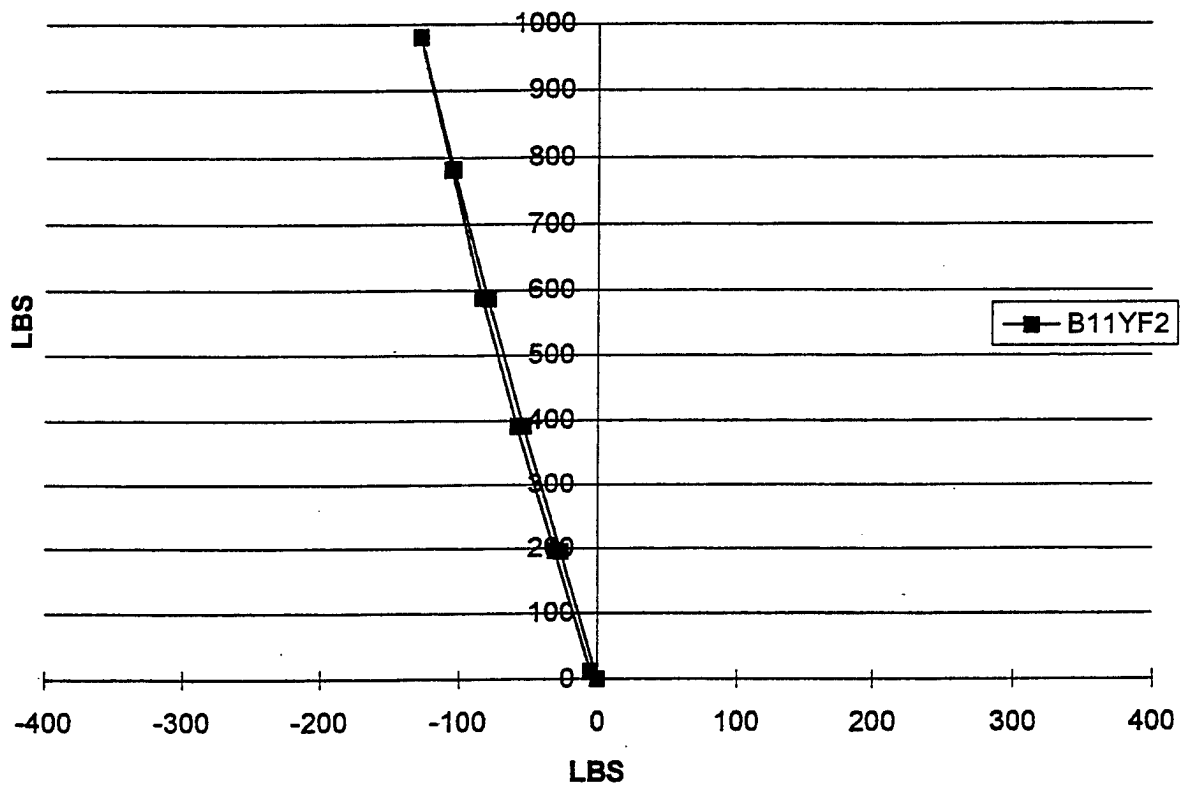
BIN B / CAL 1 HPD5 70041-46 / FWD L SUPPORT 10 / GAGE 2 (UPPER) / LATERAL FORCE



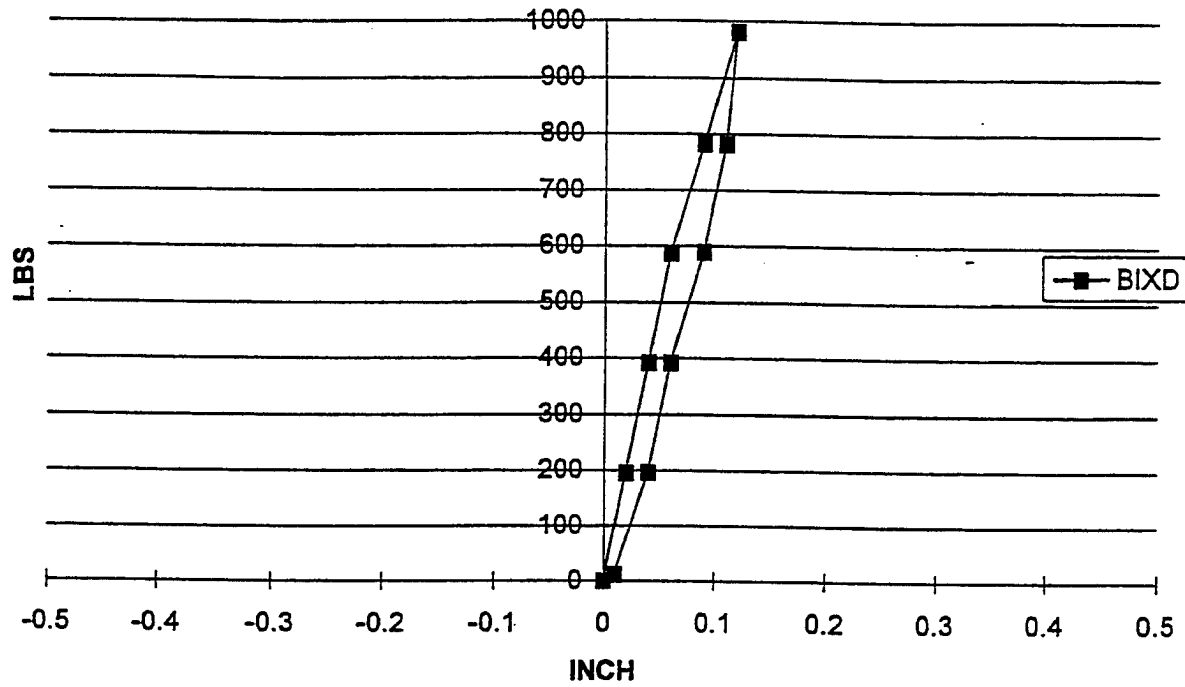
BIN B / CAL 1 HPD5 70041-46 / AFT L SUPPORT 11 / GAGE 1 (LOWER) / LATERAL FORCE



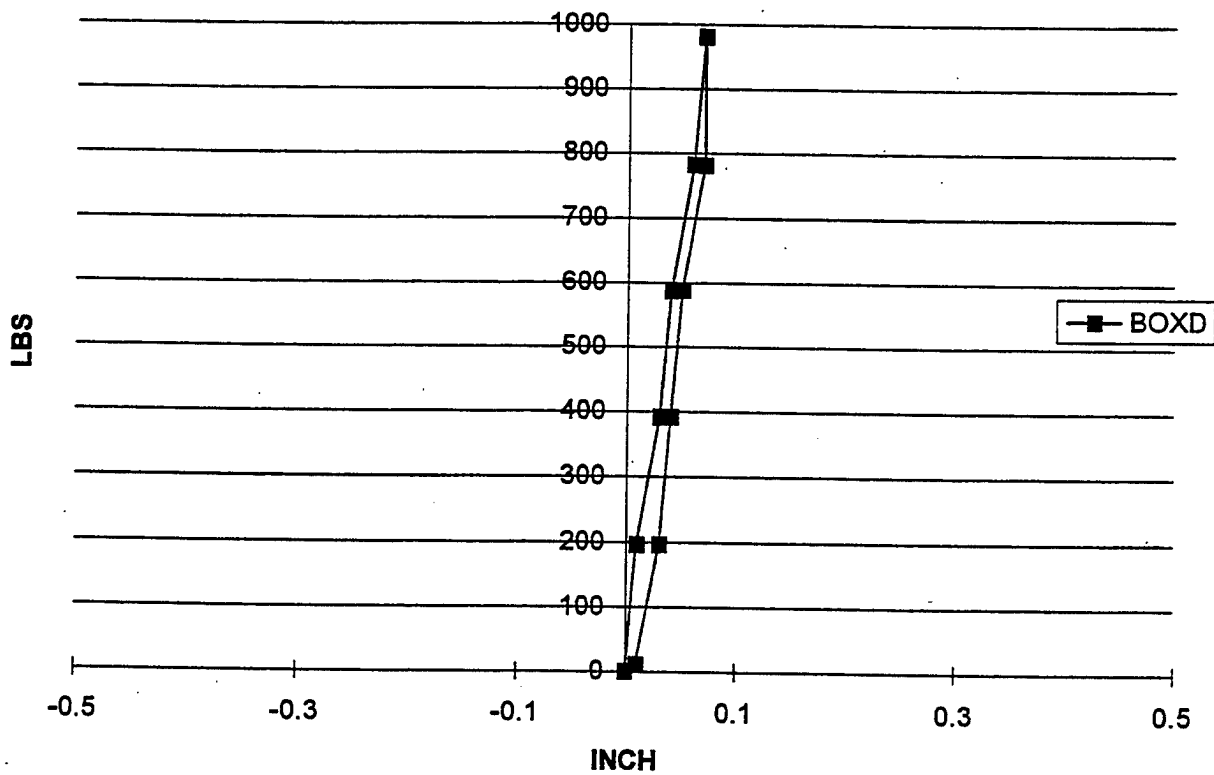
BIN B / CAL 1 HPD5 70041-46 / AFT L SUPPORT 11 / GAGE 2 (UPPER) / LATERAL FORCE



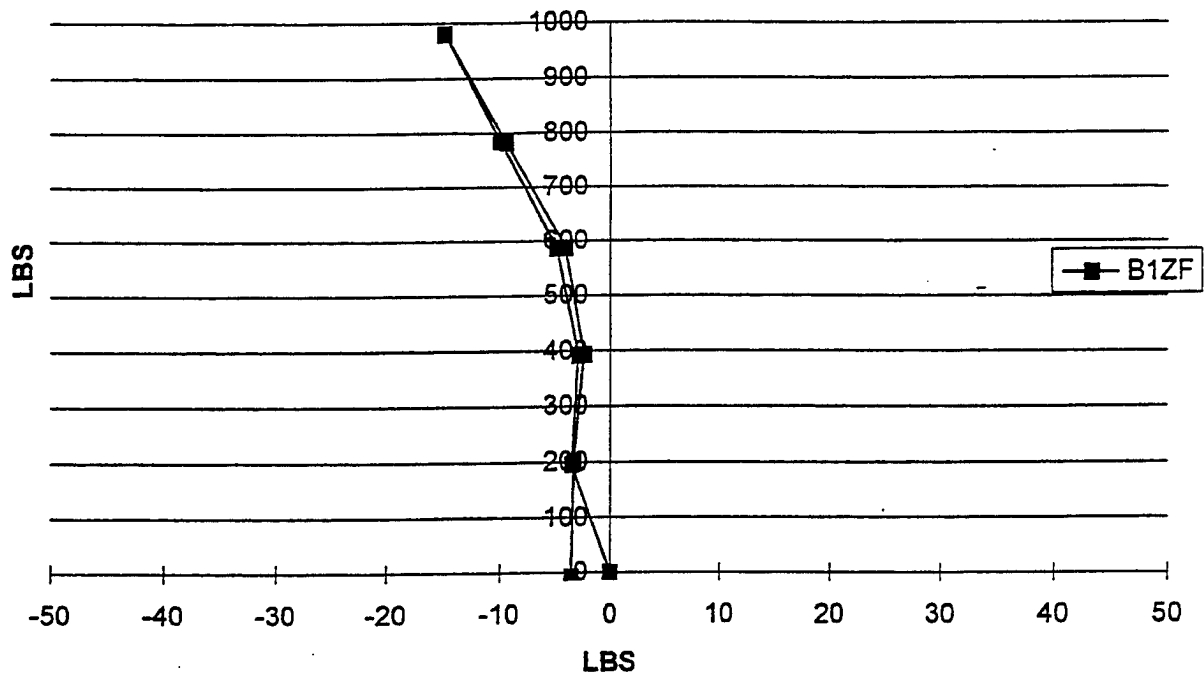
BIN B / CAL 1 INNER LONGITUDINAL DISPLACEMENT



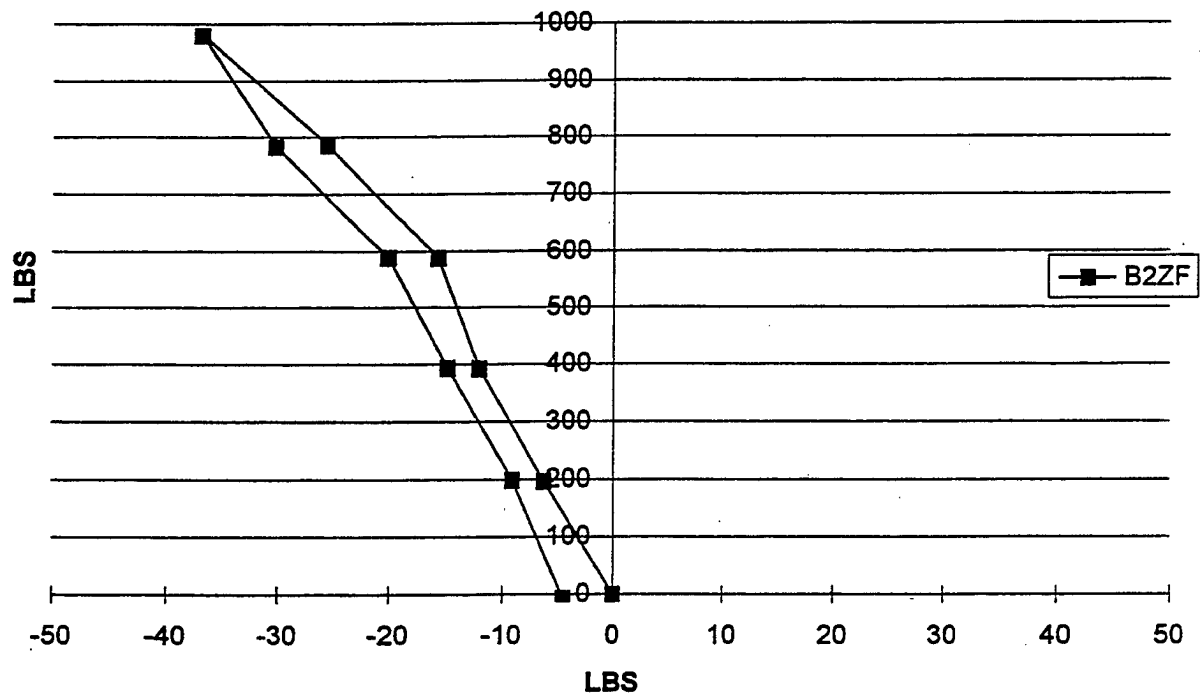
BIN B / CAL 1 OUTER LONGITUDINAL DISPLACEMENT



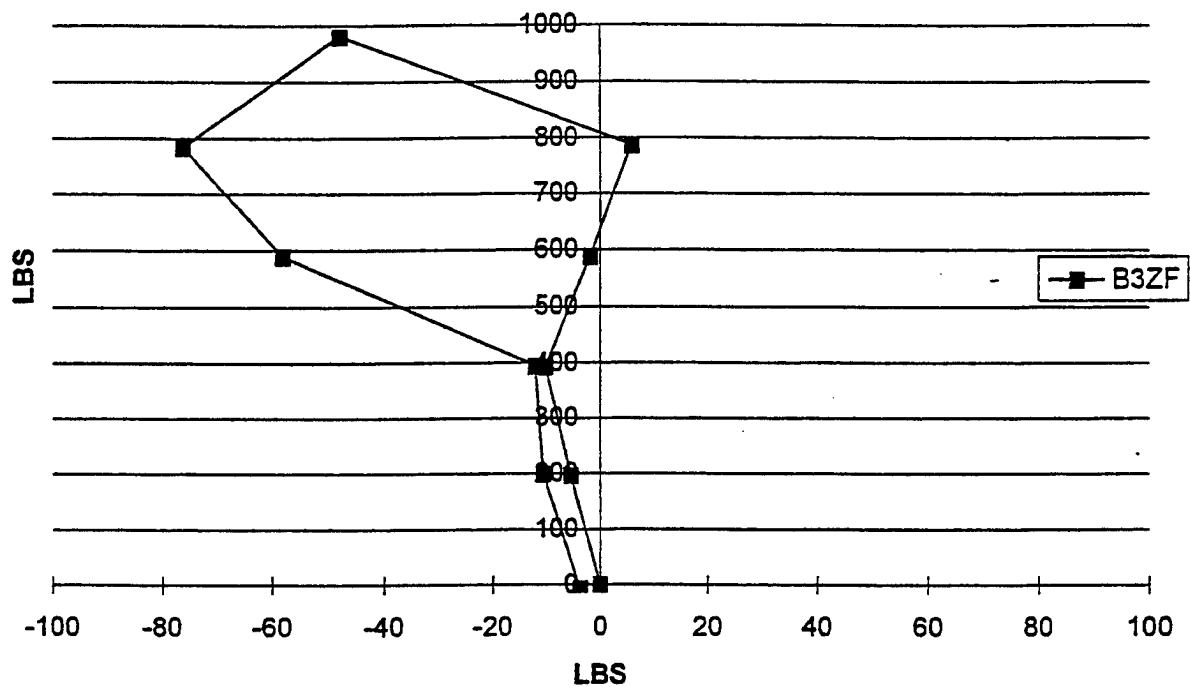
BIN B / CAL 2 HPD9 70066-7 / AFT SUPPORT 1 / VERTICAL FORCE



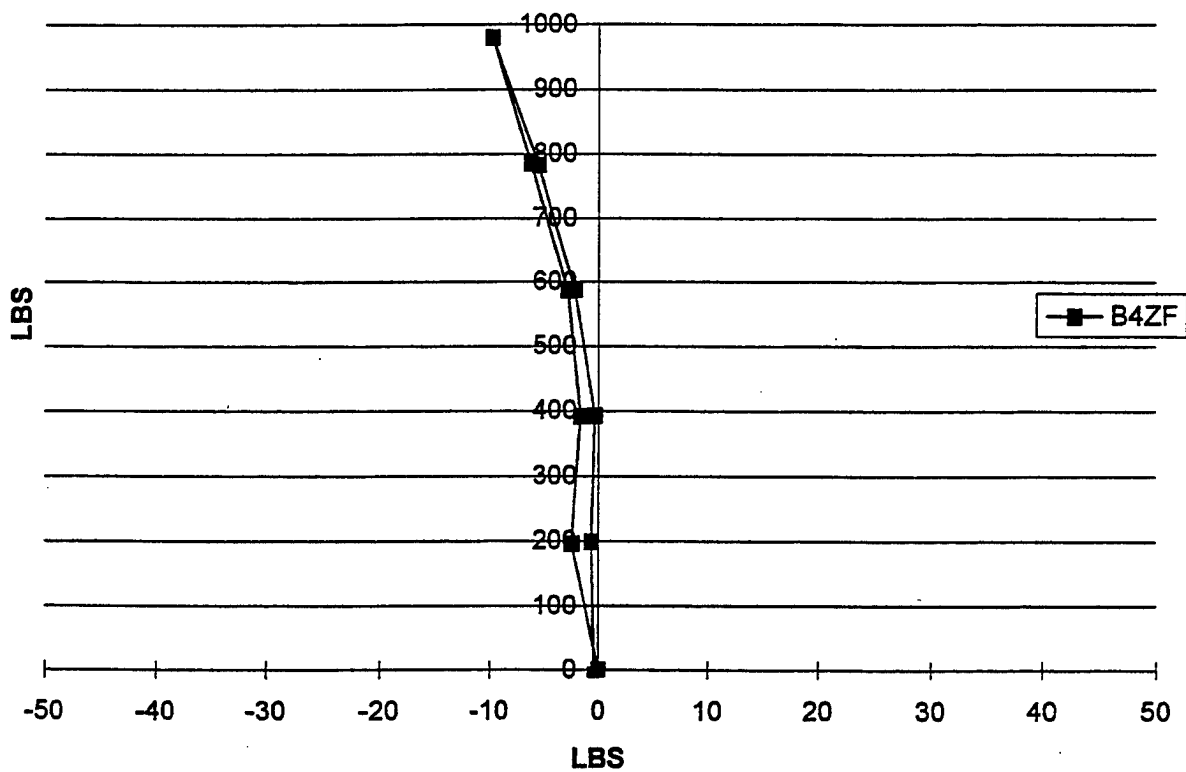
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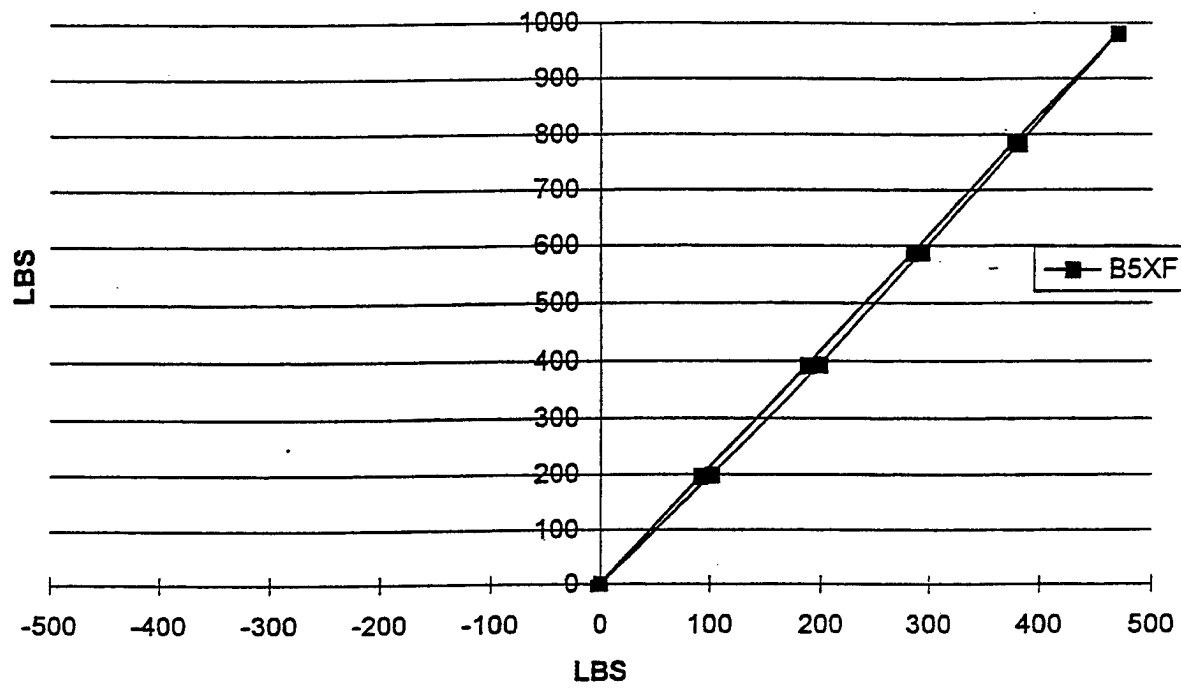
BIN B / CAL 2 HPD9 11032-43 / FWD SUPPORT 1 / VERTICAL FORCE



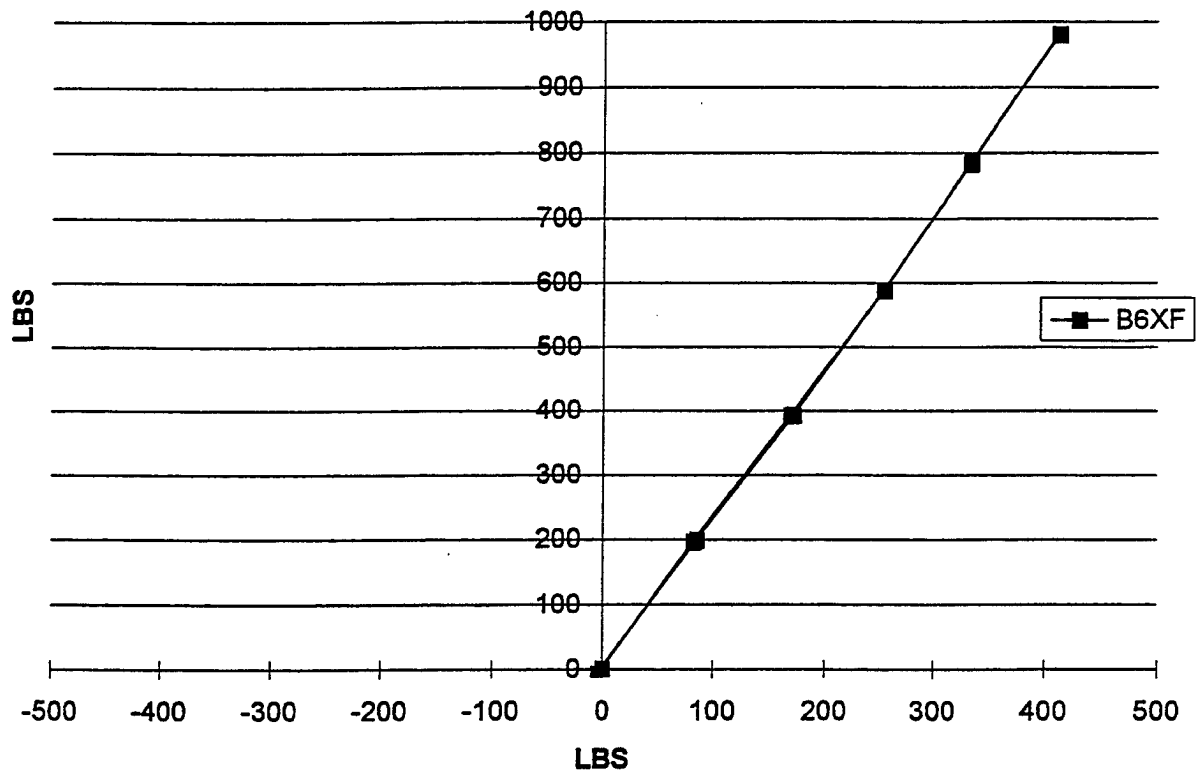
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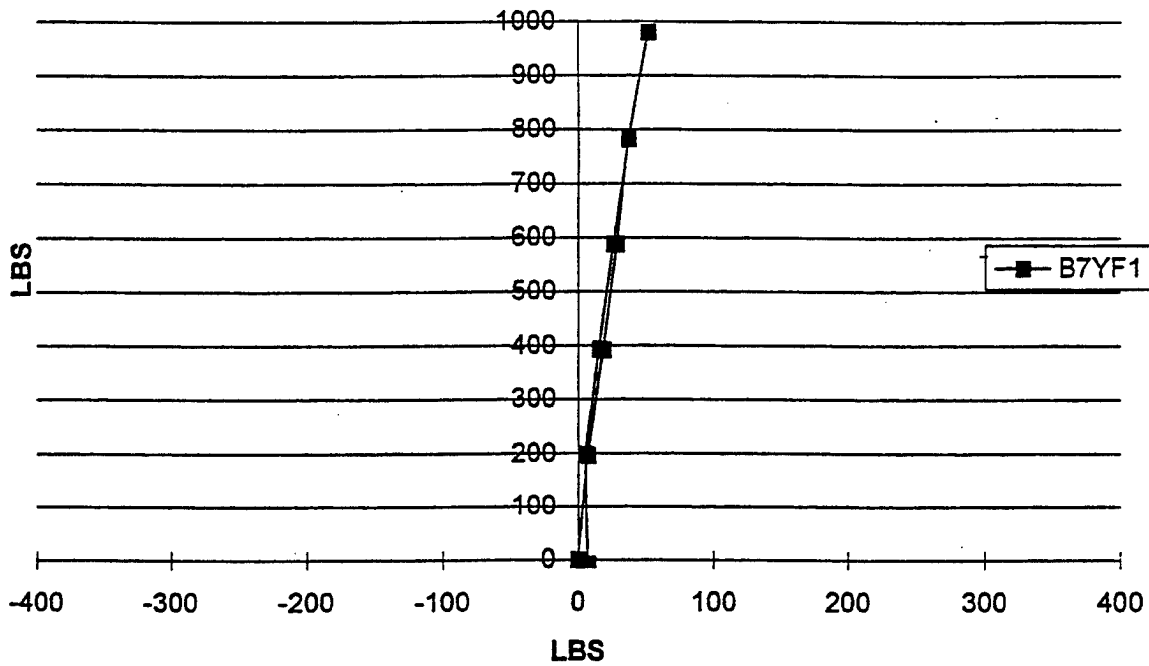
BIN B / CAL 2 HPD5 70060-159 / PLATE SUPPORT 5 / LONGITUDINAL FORCE



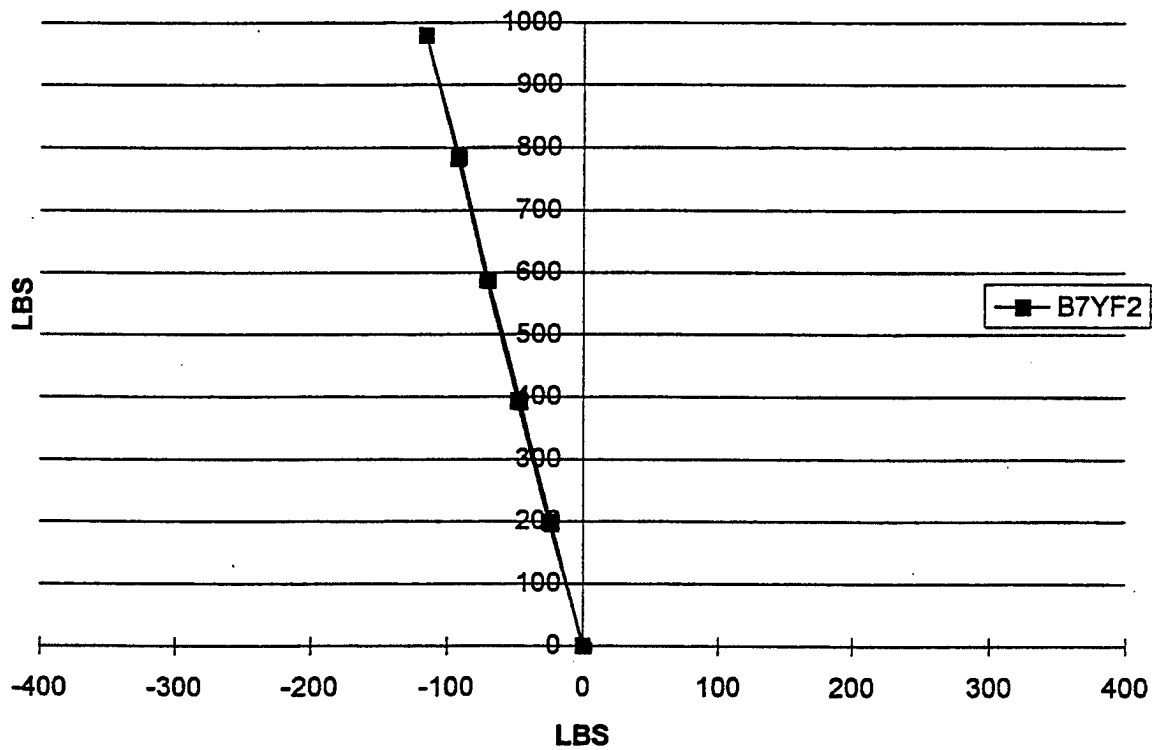
BIN B / CAL 2 HPD5 70060-159 / PLATE SUPPORT 6 / LONGITUDINAL FORCE



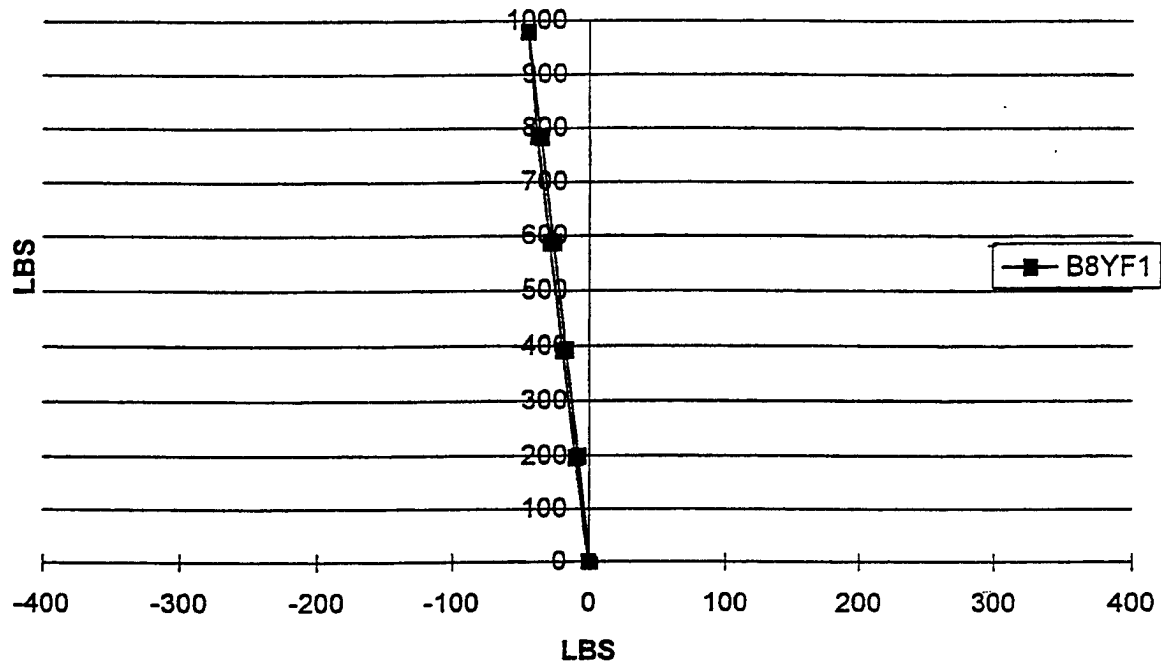
BIN B / CAL 2 HPD5 70041-46 / L SUPPORT 7 / GAGE 1 (LOWER) / LATERAL FORCE



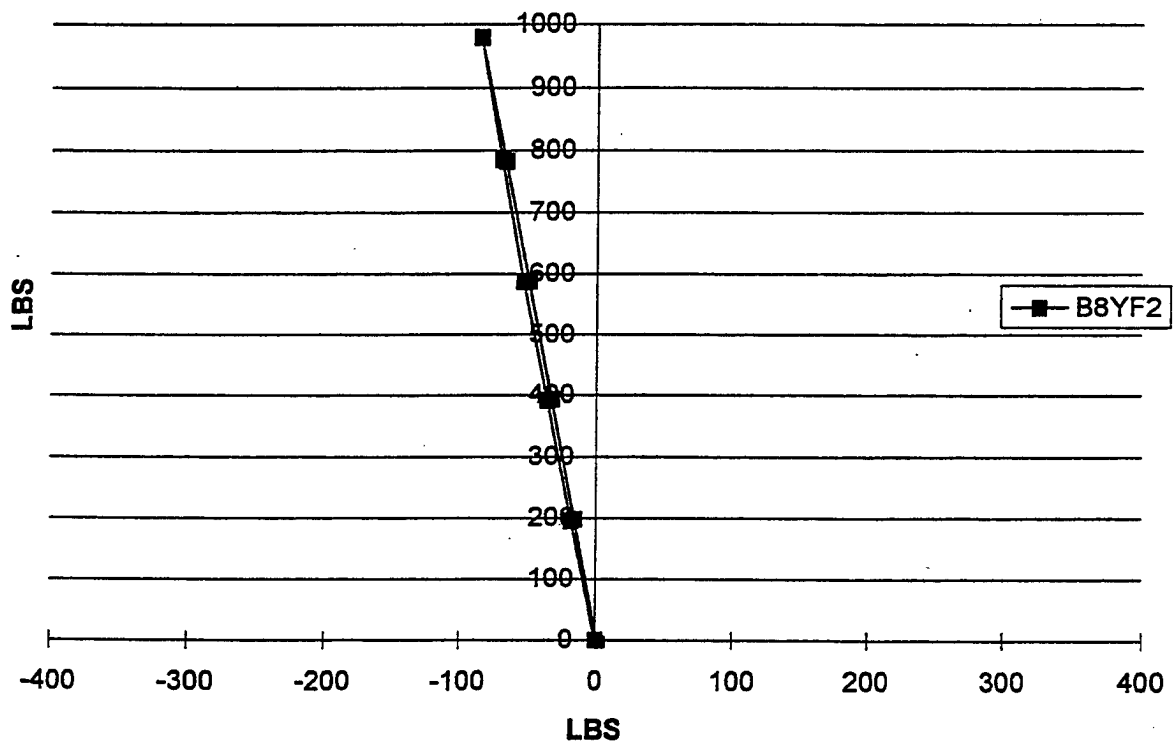
BIN B / CAL 2 HPD5 70041-46 / L SUPPORT 7 / GAGE 2 (UPPER) / LATERAL FORCE



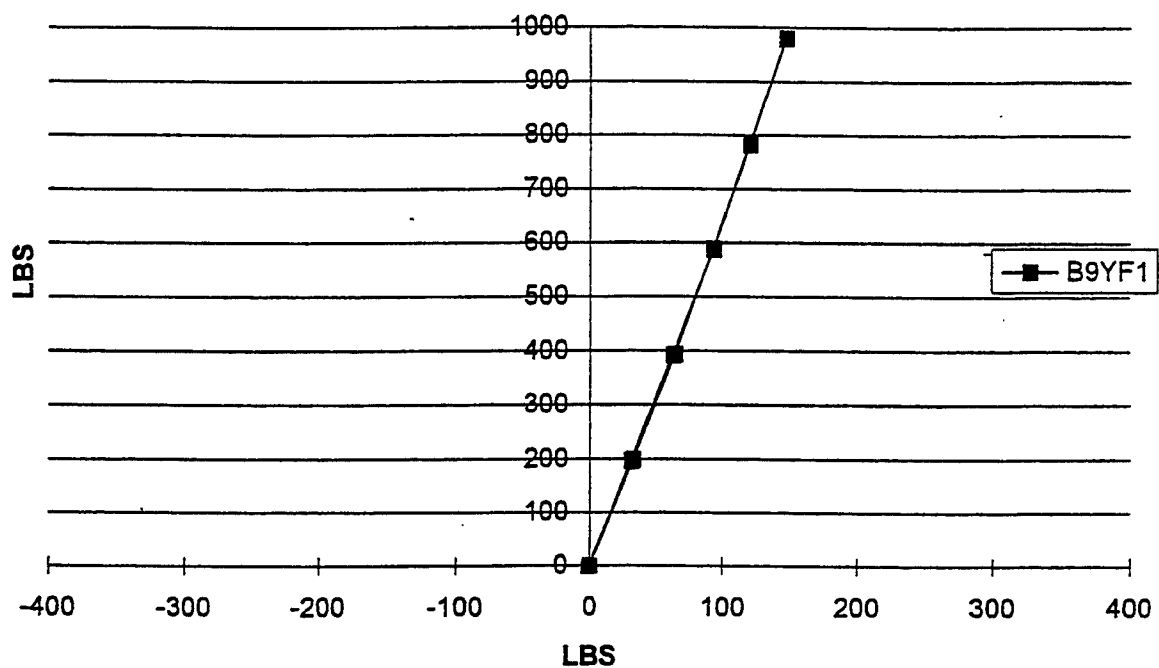
BIN B / CAL 2 HPD5 70041-46 / L SUPPORT 8 / GAGE 1 (LOWER) / LATERAL FORCE



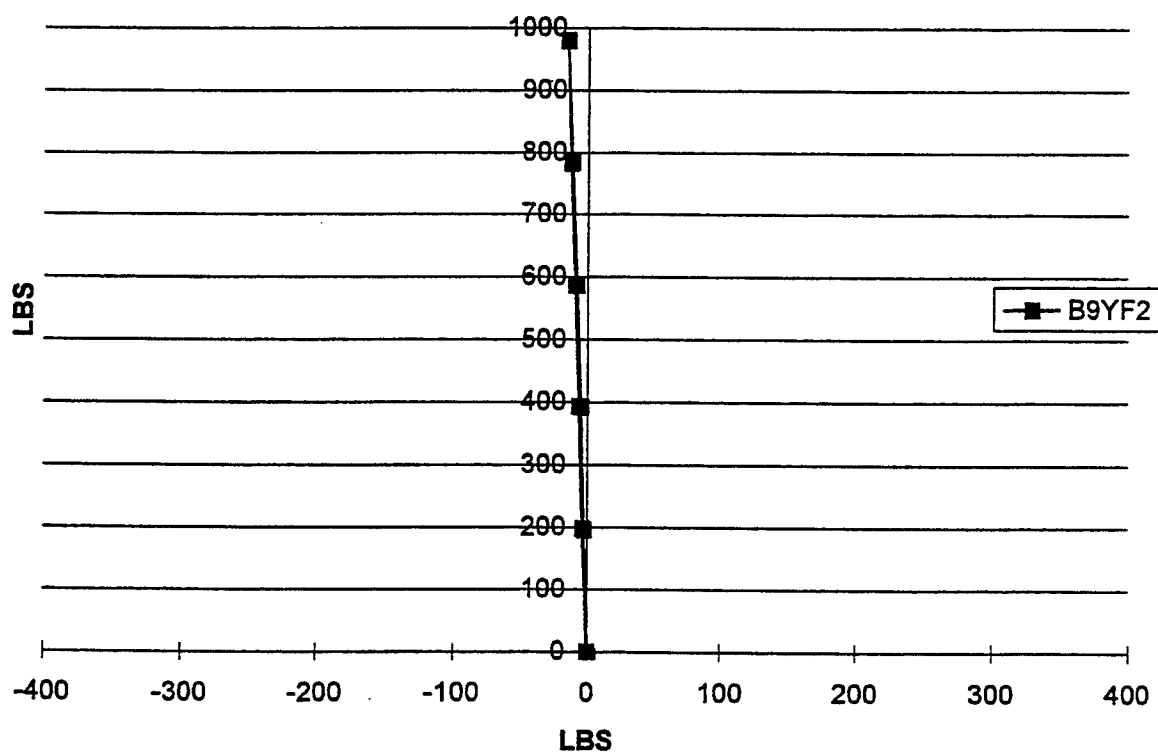
BIN B / CAL 2 HPD5 70041-46 / L SUPPORT 8 / GAGE 2 (UPPER) / LATERAL FORCE



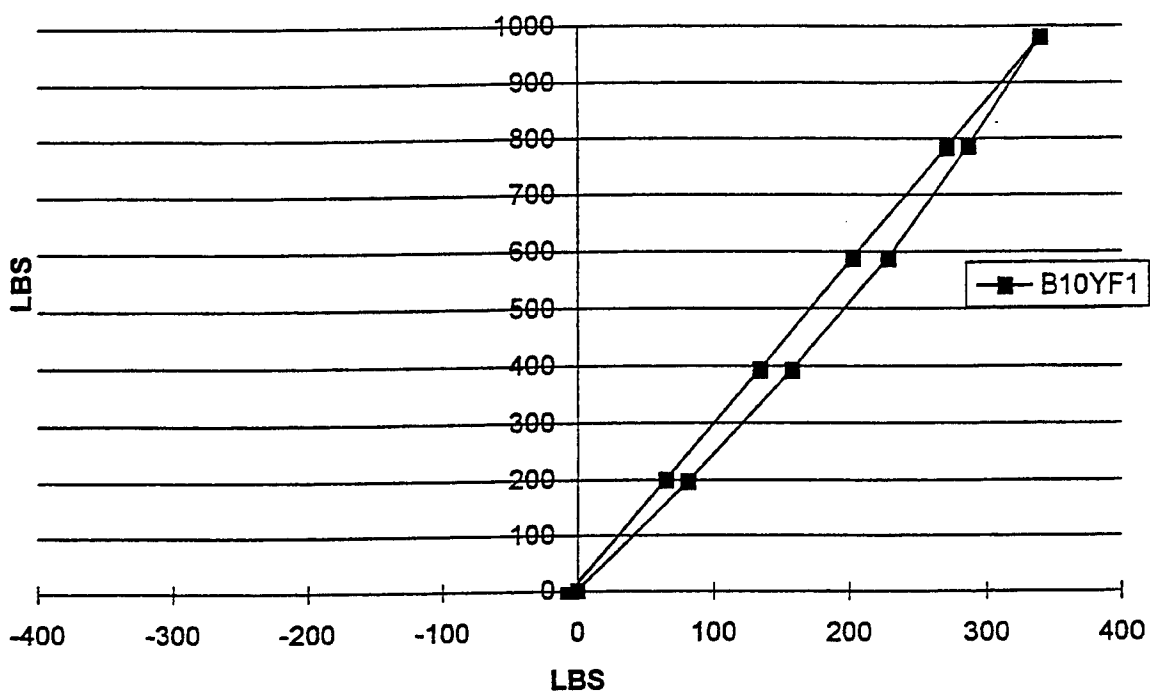
BIN B / CAL 2 HPD5 70041-46 / L SUPPORT 9 / GAGE 1 (LOWER) / LATERAL FORCE



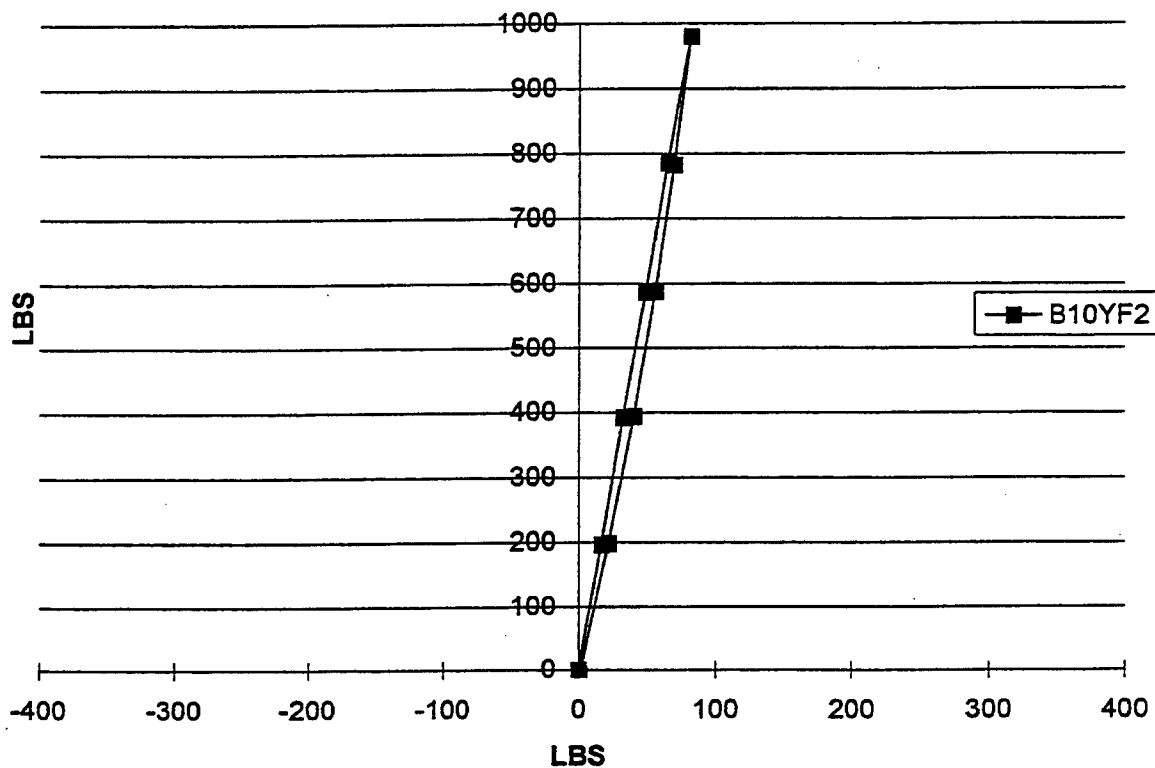
BIN B / CAL 2 HPD5 70041-46 / L SUPPORT 9 / GAGE 2 (UPPER) / LATERAL FORCE



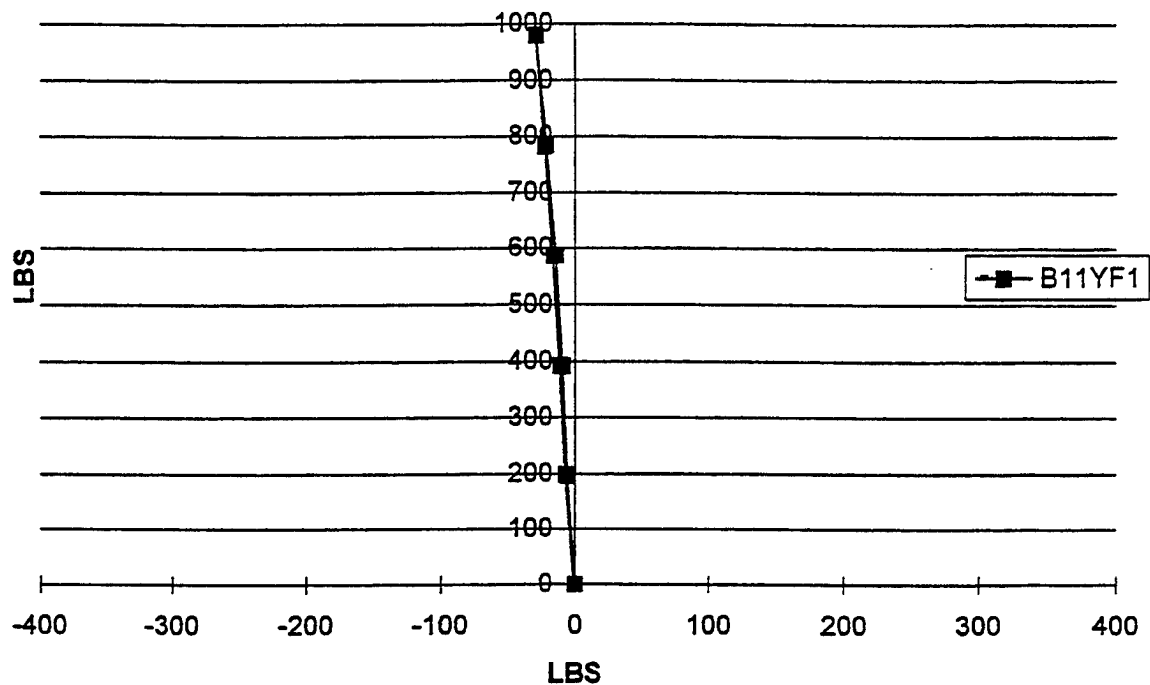
BIN B / CAL 2 HPD5 70041-46 / FWD L SUPPORT 10 / GAGE 1 (LOWER) / LATERAL FORCE



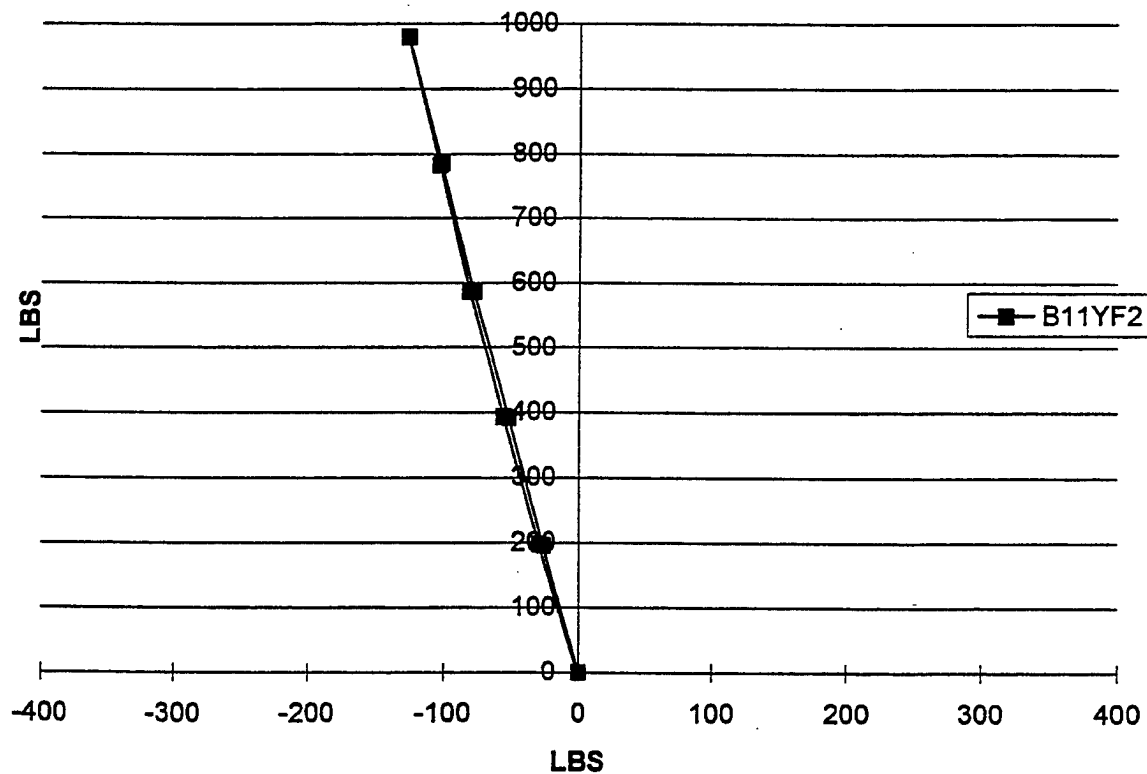
BIN B / CAL 2 HPD5 70041-46 / FWD L SUPPORT 10 / GAGE 2 (UPPER) / LATERAL FORCE



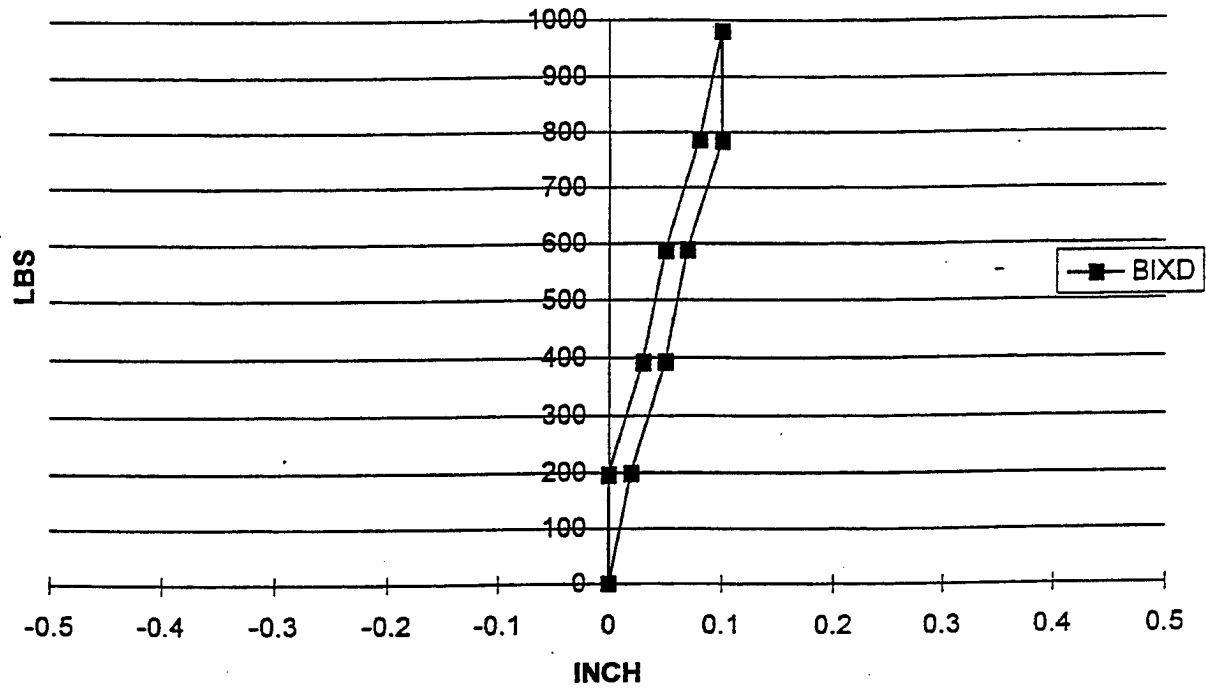
BIN B / CAL 2 HPD5 70041-46 / AFT L SUPPORT 11 / GAGE 1 (LOWER) / LATERAL FORCE



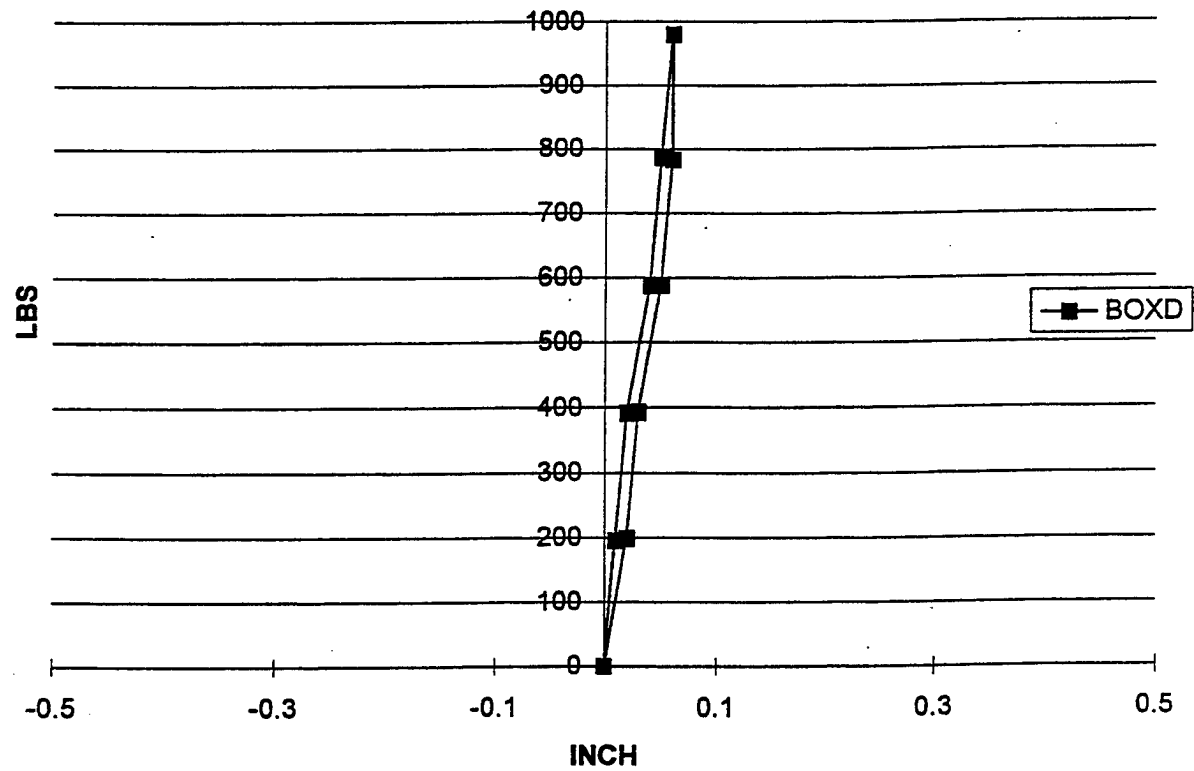
BIN B / CAL 2 HPD5 70041-46 / AFT L SUPPORT 11 / GAGE 2 (UPPER) / LATERAL FORCE



BIN B / CAL 2 INNER LONGITUDINAL DISPLACEMENT



BIN B / CAL 2 OUTER LONGITUDINAL DISPLACEMENT



APPENDIX D—MISCELLANEOUS DATA

Filtering Data

SAE J211 MAR95

Sled and Airframe:

Sled Acceleration Class 60

Fuselage Acceleration Class 60

Overhead Stowage Bin Acceleration Class 60

Auxiliary Fuel Tank Acceleration Class 60

Potentiometer Filter Class 60

Overhead Stowage Bin Load Cell Filter Class 60 (For Impact Tests)

Overhead Stowage Bin Load Cell Filter Class 1000 (For Static Calibration Pull Tests)

Miscellaneous Strain Gage Filter Class 60 (Bin A Upper Supports C & D)

Integration Filter Class 180

Strain gage Class 60

Positive Data Direction

Accelerations

Longitudinal	Forward
Lateral	Leftward
Vertical	Upward

<u>Stowage Bin Displacement</u>	Forward
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<u>Auxiliary Fuel Tank Displacement</u>	Forward
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